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UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

FEDERAL HOUSING FINANCE AGENCY, AS CONSERVATOR FOR THE FEDERAL NATIONAL MORTGAGE ASSOCIATION AND THE FEDERAL HOME LOAN MORTGAGE CORPORATION, Plaintiff, -against- NOMURA HOLDING AMERICA INC., et al., Defendants.	No. 11-cv-6201 (DLC) ECF Case

Amended Direct Testimony of
Kerry Vandell, Ph.D.

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AFFIDAVIT OF KERRY D. VANDELL PH.D.

STATE OF CALIFORNIA)
) ss:
ORANGE COUNTY)

Kerry D. Vandell, Ph.D., being duly sworn, deposes and says:

1. My name is Kerry D. Vandell. I am the Dean's Professor of Finance and Director of the Center for Real Estate at the Paul Merage School of Business, University of California, Irvine.

2. I provide this affidavit as my direct testimony at trial. My testimony evaluates whether alleged misrepresentations in the Offering Documents, as opposed to other factors, caused delinquencies and defaults for loans in the supporting loan groups ("SLGs") for the seven Certificates at issue in this action ("At-Issue Certificates"), and thus any losses that were incurred by Freddie Mac and Fannie Mae on those Certificates.

I. Background and Qualifications

3. I began my career studying mechanical engineering at Rice University and obtained my Bachelor of Arts and Masters in Mechanical Engineering degrees in 1970. Rice awarded me several merit scholarships, including the Rice Engineering Alumni Outstanding Engineering Graduate Scholarship. I was also elected to the Tau Beta Pi National Engineering Honorary Society and Sigma Tau National Mechanical Engineering Honor Society, and received other honors.

4. After graduation, I first joined Enco (which is now Exxon) as an associate petroleum engineer. However, after one year, my evolving interest in the economic and social

issues associated with the dynamics of urban development led me away from petroleum engineering to a career in academic research and consulting in these areas. I enrolled in graduate school at Harvard in 1971, where I was named a National Science Foundation Fellow and graduated with a Masters in City and Regional Planning degree in 1973.

5. I then continued my education at the Massachusetts Institute of Technology, where I was able to supplement my analytical engineering and social sciences training received at Rice and Harvard with doctoral level education in economics and finance. I obtained my Doctorate in Urban Studies and Planning in 1977, with a specialization in urban and real estate economics and mortgage finance. I was named the Charles Abrams Fellow at the MIT-Harvard Joint Center for Urban Studies. My doctoral dissertation, entitled *Alternative Mortgage Instruments: Their Distributional Effects on Homeownership, Housing Consumption, and the Use of Mortgage-Credit*, addressed the distributional impact of alternative mortgage instrument designs on homeownership, housing consumption, and the use of mortgage credit (including mortgage default risk under alternative mortgage instruments), all topics directly relevant to the claims alleged by plaintiff in this Action. My doctoral research, as well as a number of subsequent publications derived from it, constituted some of the first efforts to study these issues rigorously.

6. While finishing my Ph.D. at MIT in 1977, I joined the Real Estate and Regional Science faculty at the Edwin L. Cox School of Business at Southern Methodist University, rising from assistant professor rank, to tenured associate professor, then full professor and Department Chairperson in 1986. During two academic years (1985-86 and 1988-89), I was invited to join the faculty back at Harvard and at the Haas School of Business, University of California Berkeley respectively as a visiting professor.

7. In 1989, I accepted an invitation from the School of Business at the University of Wisconsin-Madison to join the faculty as Professor and Chairman of the Department of Real Estate and Urban Land Economics. While at Wisconsin, I was appointed Director for the Center for Urban Land Economics Research in 1990, and named the Tiefenthaler Chaired Professor of Real Estate and Urban Land Economics in 1996. I also served on the board of The Park Bank, a commercial bank, which had an active mortgage banking program, and served on the bank's loan committee.

8. After more than fifteen years at the University of Wisconsin-Madison, I became a professor of finance and the Director of the Center for Real Estate at the Paul Merage School of Business, University of California, Irvine ("UCI") in July 2006. I was the founder of UCI's new academic focus in real estate. In 2008, I became the Dean's Professor of Finance at the Paul Merage School of Business at UCI, and I continue to hold those positions.

9. Throughout my 39-year career, I have researched and consulted widely in the areas of real estate investment, real estate economics, mortgage finance, housing economics and policy, and valuation theory, and have written or co-authored more than 80 papers which have appeared in such publications as the Journal of Finance, the Quarterly Journal of Economics, Real Estate Economics, the Journal of Real Estate Finance and Economics, and the Wharton Real Estate Review. I have served as President of the American Real Estate and Urban Economics Association and Co-Editor of the Association's journal, Real Estate Economics, as well as in a number of other positions in academic and professional organizations, including the Urban Land Institute, the Counselors of Real Estate, the International Council of Shopping Centers, the Real Estate Roundtable, and NAIOP (the Commercial Real Estate Development Association). I was elected a Fellow and member of the faculty of the Weimer School of

Advanced Studies in Real Estate and Urban Economics, a "think tank" which sponsors research symposia by Fellows and distinguished guests. I have presented at conferences and meetings in Asia, Europe and throughout the United States and I currently serve as a board member of the Asian Real Estate Society.

10. My areas of research specialization include housing economics and policy, international real estate markets, real estate market dynamics, and mortgage finance—especially mortgage-backed securitization—structured finance, and the pricing of default and prepayment risk. I have taught courses on a variety of real estate and economics topics, including mortgage finance, real estate market dynamics, market-based approaches to urban policy, international real estate markets and community economic development. My recent research on real estate illiquidity provides investors with tools to guide investment allocation to housing and real estate in mixed-asset portfolios. My work distinguishing real estate value from business enterprise value in the appraisal of complex real property interests has had international influence on tax assessment practices. I have three forthcoming articles reporting the results of my research on commercial mortgages, commercial mortgage-backed securities, the housing supply and providing commentary on recent studies on subprime mortgages.

11. My knowledge in the field of residential mortgage-backed securitization derives in part from my active involvement in real estate finance and mortgage markets research and development for almost forty years. For more than twenty of those years, I have taught classes addressing developments in the housing markets, mortgage finance and the secondary mortgage market. As part of my teaching and academic advancement, I keep current on issues in the real estate and housing markets, including research related to the causes of the most recent downturn in the housing market.

12. As a result of my experience described above, I am thoroughly familiar with the real estate and mortgage markets (both primary and secondary) and with analyzing the causes of mortgage default and their effect on the pricing of mortgages and mortgage-backed securities. I have testified by deposition or at trial in seven other cases during the last four years.

II. Summary of Testimony[1]

13. Market factors, especially house price declines, affect the performance of mortgage loans, and therefore residential mortgage-backed securities backed by such loans. Any losses attributed to the At-Issue Certificates were caused by these market factors—in large part the house price decline—and not by any alleged misrepresentations in Offering Documents describing the origination of loans supporting the At-Issue Certificates.

14. Government policies and favorable economic conditions from the late 1990s through 2006 resulted in increased mortgage lending, including higher-risk mortgage lending, as well as accelerated house price appreciation.

15. A sudden, deep, and largely unanticipated deterioration in house prices beginning around May 2007 led to high rates of borrower delinquencies and defaults.

16. I performed a regression analysis comparing the performance (defined as serious delinquencies or defaults) of two groups of loans: (i) those loans plaintiff's expert, Robert W. Hunter, asserts were materially defective to the loans, and (ii) those loans Mr. Hunter reviewed

[1] I am aware that the Court ruled on February 10, 2015 that I would not be permitted to testify with respect to three benchmark analyses that I constructed concerning the At-Issue Certificates and the conclusions about loss causation that follow from the analyses. *See* Vandell Report at pp. 86-110, Exs. 55-66. If the Court determines at some point between February 20, 2015 and my testimony at trial to reconsider this ruling, I am prepared to testify at length on my construction of these three benchmarks, my analyses of the three benchmarks, and my opinions and conclusions about loss causation and the At-Issue Certificates based on my three benchmark analyses. *See* Vandell Report at pp. 86-110, Exs. 55-66.

but did not identify as containing material defects impacting the credit risk of the loans. That analysis demonstrates that both groups of loans performed similarly, all else equal. In other words, the fact that a loan was identified by Mr. Hunter as containing a material defect had no statistically significant impact on whether the loan would become seriously delinquent or default. This shows that the performance of the loans plaintiff asserts were materially defective was not affected by any of the alleged defects identified by Mr. Hunter—and that the losses allegedly suffered by the At-Issue Certificates were not caused by any of these alleged defects.

17. The empirical analysis performed by plaintiff's expert, Dr. G. William Schwert shows that any losses experienced by the seven Certificates at issue here were mostly or entirely caused by factors other than the alleged misstatements.[2]

III. Many Factors Affect the Performance of Mortgage Loans, Including Economic Trends and House Prices

18. The background to which I refer below is central to an understanding of the causes of defaults and delinquencies for mortgage loans generally, including for the loans that supported the securitizations at issue in this case.

A. The Basics of Mortgages and Residential Mortgage-Backed Securities

19. A mortgage is a loan secured by a home or other underlying asset. Mortgage lenders compete for customers by offering different types of loans and different loan terms, such as fixed or variable interest rates, shorter or longer amortization periods, and lower interest rates or closing costs, to serve various segments of the home-buying market.

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[2] The analysis performed by defendants' expert Dr. Stephen Ryan supports my opinions as well, but I understand that the Court has excluded Dr. Ryan's testimony. If the Court determines at some point between February 20, 2015 and my testimony at trial to reconsider this ruling, I am prepared to testify at length about how Dr. Ryan's opinions support my own, consistent with my July 9, 2014 expert report in this case.

20. The mortgage market has many participants: A loan originator (e.g., a mortgage banker or broker) describes the various loan options available to the homebuyer and assists with the application process. An underwriter assesses whether the application satisfies applicable underwriting guidelines. A lending institution funds the loan. Sometimes the same financial institution plays all of these roles, while in other cases these roles are played by different firms.

21. A lending institution may be a depository institution or a non-depository institution. Depository institutions, which include traditional banks, credit unions, and savings and loan associations, take deposits from savers and lend those funds to borrowers. With each new loan, a depository institution may choose whether to hold the loan on its books, adding to its portfolio of loan assets (hence the term "portfolio lender"); sell the loan to an investor; or securitize the loan as part of a residential mortgage-backed security (or "RMBS"). Non-depository institutions, on the other hand, which include mortgage banks and loan correspondents, do not hold deposits. Their operations are generally funded through lines of credit. Loans that non-depositary institutions make are typically sold or securitized.

22. An asset-backed security, such as an RMBS, is a type of investment vehicle in which cash-producing assets are pooled together into a trust. Investors can then purchase securities (also referred to as certificates) backed by the cash flows that derive from the underlying assets. In the case of an RMBS, the cash-producing assets are a pool of residential mortgage loans, which may include first- and/or second-lien mortgages.

23. Securitization is the process of creating a marketable security from a pool of cash-producing assets. In a typical mortgage-backed securitization, the assets—the pool of mortgage loans—are transferred from the originator or sponsor to a bankruptcy-remote depositor (typically a special purpose entity) which then transfers the assets to a stand-alone trust. The sponsor, often

in conjunction with other parties to the securitization, then determines the structure of the securities to be issued by the trust, which often entails the creation of multiple tranches (a piece or portion of a deal or structured financing) with varying levels of seniority and credit enhancement (*i.e.* different risks and rewards).

24. The cash flows generated by the underlying assets—in the case of an RMBS, the underlying borrowers' payments of principal and interest—are allocated among investors in accordance with the structure of the securitization. Generally, the more senior tranches receive the cash flows first, before the more subordinate tranches. A loan servicer collects and distributes payments to an appointed trustee, which in turn distributes the cash flows to investors.

25. The market in which RMBS are sold is called the secondary mortgage market for residential loans. This secondary mortgage market includes securities of two types: agency securities (*i.e.*, those RMBS backed by the federal government or government-sponsored enterprises, including securities issued by trusts established by Fannie Mae or Freddie Mac), and private-label securities (which are RMBS that are not backed by the federal government or government-sponsored enterprises). Private-label issuers may employ a variety of internal and external credit enhancements that provide RMBS investors with a first line of protection against losses suffered by the underlying mortgage pool. Credit enhancements may include senior/subordinate structures, overcollateralization, special reserves, pool insurance, and excess interest.

26. Freddie Mac and Fannie Mae were created by the federal government but later became privately owned, and eventually placed under conservatorship. Each participates in the secondary mortgage market both through the purchase of mortgage loans from originators, which may be held in portfolio or pooled and sold to investors as RMBS, and through the purchase of

RMBS from other issuers. Freddie Mac and Fannie Mae are each one of the most sophisticated and knowledgeable participants in the housing and mortgage market. Freddie Mac and Fannie Mae played a significant role in the growth of the secondary mortgage market beginning in the 1970s.

B. Factors That Impact the Performance of Mortgages and Residential Mortgage-Backed Securities

27. In order to understand the causes of losses to a particular RMBS, one has to understand the causes of losses to the loans backing that particular RMBS. This is because the overall performance of an RMBS depends on the performance of the underlying assets—the pools of mortgage loans—and thus, the performance of the RMBS depends on borrowers paying their mortgages. If borrowers default or fail to pay their mortgages, then there is less cash to allocate among the tranches (with the most subordinate tranches absorbing shortfalls first). Conversely, if borrowers prepay their mortgages or pay their mortgages back faster, then investors obtain a quicker (though not necessarily higher) return on the investment in that RMBS deal.

28. Many factors have been shown to influence a borrower's likelihood of defaulting on his or her mortgage.

29. House price declines have been found to be the dominant default predictor. Mortgage defaults increase when the value of a borrower's home is sufficiently less than the amount of the mortgage loan, which is called negative equity. This occurs when house prices decrease significantly or when loan balances increase. When this happens, the mortgage is considered "under water." In such a situation, refinancing is difficult, and taking out a larger mortgage to pay off an existing mortgage is virtually impossible. Furthermore, when a house is worth less than what is owed on it, the borrower's incentive to continue paying existing loans

decreases, especially if the costs of defaulting are low (*e.g.*, if there is no recourse to the borrower's other assets or the borrower has no other significant assets).

30. Credit trigger events, such as job loss, illness or death in the family, divorce, or excessive spending, also increase a borrower's likelihood of defaulting. A decrease in a borrower's income due to events such as these makes it more difficult to make mortgage payments. More generally, deteriorating economic conditions increase the likelihood of default. For example, academic research finds a positive relationship between the unemployment rate (which is a measure of economic conditions) and the likelihood of default. Unemployment can be the cause of a credit trigger event by precipitously reducing household income, particularly if the borrower has no cash flow "cushion" in the form of equity in the house or other liquid assets. Deteriorating economic conditions can also adversely affect demand for housing, which puts additional downward pressure on house prices.

31. Defaults are most likely to occur when a credit trigger event and negative equity coincide. This combination of solvency problems and negative equity occurred across the United States with the large nationwide decrease in house prices beginning in or around April 2007 and worsening through the ensuing recession. As I will explain, a very large and unanticipated decline in house prices was a key factor that led to far more mortgage defaults and losses than expected when the Certificates were initially purchased by Freddie Mac and Fannie Mae.

32. The risk of default has also been found in academic and industry studies to be related to other loan, property, and borrower characteristics:

- Collateral Type of the Loan. Fixed rate loans and adjustable rate mortgages ("ARMs," also called hybrids) are affected differently by changes in interest rates, and therefore have different risk profiles.

- Asset Type of the Loan. Subprime loans are generally thought to be more risky than Alt-A loans, which are more risky than prime loans.

- Lien Position. All else equal, a second-lien loan is riskier than a first-lien loan because a first-lien loan provides the lender with a higher priority claim on the collateral in the event of foreclosure.

- Interest-only. A loan is categorized as interest-only if, for a set term, a borrower pays only the interest on the principal balance while the principal balance remains unchanged. Academic studies have found that interest-only loans tend to have lower default rates during the interest-only period, but higher default rates afterward, likely because monthly payments adjust upward as the borrower is required to start paying principal as well as interest.[3]

- Loan-to-Value or Combined Loan-to-Value Ratio. The loan-to-value ("LTV")[4] and the combined loan-to-value ("CLTV")[5] ratios reflect the amount of the loan extended to the borrower relative to the "value" (as determined usually by a sales price or appraisal) of the underlying property. High rates of property depreciation on a high LTV or high CLTV loan that has experienced little (or negative) amortization of principal can result in borrowers owing more than the value of the property. Therefore, loans with a relatively high LTV or high CLTV are associated with a higher expected rate of default.

- Documentation. The amount of documentation a borrower provides during the underwriting process can be another indicator of credit quality and risk. A fully documented loan application both discloses and verifies the borrower's income and assets. Documentation programs that enable borrowers to qualify for loans without disclosing and verifying income and assets increased in popularity from the early 2000s until 2007. The academic literature and industry analysts' studies have consistently shown that loans issued to borrowers who provided less than full documentation

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[3] Sherlund, Shane, "The Past, Present, and Future of Subprime Mortgages," Finance and Economics Discussion Series, Divisions of Research & Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C., November 2008.

[4] LTV is the outstanding balance on a loan relative to the property value.

[5] CLTV is the outstanding balance of all loans with claims on a property in relation to the property value.

as part of their applications were more likely to default than loans issued to borrowers with fully documented applications.[6]

- Loan Purpose. Borrowers typically secure mortgages to finance a home that serves as their residence, a second home, or as an investment property. The academic literature provides evidence that loan purpose is a relevant factor in determining default risk.[7] Borrowers obtaining credit for a primary residence are typically less likely to default than borrowers using the loan for investment properties. This is commonsense as borrowers are more likely to make payments on the house in which they actually are living.

- Credit Score. Borrower characteristics, such as credit history, also affect default risk. The FICO score, developed by Fair Isaac and Company, is a credit score assigned to a borrower, which lenders use to determine how much, if any, credit to grant. The score is assigned to the applicant by an independent credit assessor (e.g., a third-party firm, the credit grantor itself, or a credit bureau in cooperation with the credit grantor) and takes into account factors such as income, assets, length of employment, period of residence, and credit history. Events such as bankruptcy or tax delinquency negatively affect an applicant's credit score. All else equal, the higher a borrower's FICO score, the more creditworthy is the borrower and the less likely he/she is to default relative to a borrower with a lower FICO score.

- Loan size. Larger loans represent a greater financial obligation for the borrower all else being equal and some empirical studies have found that loans with a larger loan balance are more likely to default.[8]

- Year of Origination and Vintage. House price behavior and economic conditions subsequent to origination can affect subsequent loan performance. Additionally, industry-wide aspects of underwriting guidelines have changed over time. Therefore, expected performance may vary depending on the year of loan origination and vintage of securitization.

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[6] *See, e.g.*, Mayer, Christopher, Karen Pence, and Shane Sherlund, "The Rise in Mortgage Defaults," *Journal of Economic Perspectives*, Volume 23, Number 1, Winter 2009, pp. 43, 44.

[7] Demyanyk, Yuliya, and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," *The Review of Financial Studies*, 2011.

[8] Demyanyk, Yuliya, and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," *The Review of Financial Studies*, 2011.

- Property type. Residential mortgages are secured by many property types. For example, the property type may be a single-family home or a multi-unit condominium facility. Some academic studies have found that loans collateralized by single-family homes are less likely to default than other properties.[9]

- Balloon payment. A balloon payment mortgage is a mortgage that does not fully amortize over the term of the loan, thus leaving a balance—or balloon payment—due at maturity. A recent study found that loans with a balloon payment are more likely to default than loans without a balloon payment.[10]

- Prepayment penalty. A loan is said to have a prepayment penalty if a penalty is imposed on a borrower if he/she pays off the principal balance of his/her loan prior to a contractually agreed date (often three years after origination). Prepayment penalties are expected to reduce the probability of prepayment during the penalty period. A prepayment penalty is an important indicator of default because at the margin, a borrower may find it optimal to default rather than to pay the prepayment penalty.

- Amortization term. The amortization term is the period over which the loan's principal balance is amortized, and is used to calculate a borrower's monthly payments. In essence, the longer an amortization period the slower the build-up of the borrower's equity, and therefore, the higher risk of default.

33. In sum, many factors have been shown to have the potential to influence a borrower's likelihood of defaulting on his or her mortgage. To determine what factors actually did influence default over a given period given the characteristics of a certain loan and borrower, it is necessary to perform an empirical study. I have performed such a study for this case, which I describe below in Section VII.

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[9] Gerardi, Kristopher, Adam Hale Shapiro, and Paul S. Willen, "Subprime Outcomes: Risky Mortgages, Homeownership Experiences, and Foreclosures," Federal Reserve Bank of Boston Working Paper, No. 07-15, May 4, 2008.

[10] Demyanyk, Yuliya, and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," *The Review of Financial Studies*, May 4, 2011.

IV. Government Policies and Favorable Economic Conditions From the Late 1990s Until 2006 Resulted In Accelerated Mortgage Lending (Often to Previously Ineligible Borrowers) and Higher Rates of House Price Appreciation

34. The U.S. housing market experienced unprecedented growth from the late 1990s through early 2006, fueled by a variety of policy and economic factors that increased the availability and affordability of mortgage loans and, by extension, expanded the pool of potential homebuyers. Loans to these types of previously ineligible borrowers had features which were known to make them highly susceptible to default in case of a downturn in the housing market.

35. These policy and economic factors included: historically low interest rates; an increase in adjustable-rate mortgages; low unemployment and increased consumer confidence; tax and regulatory policies designed to encourage homeownership; policies that encouraged—even mandated—lending to low-income households; activity by investors; a relaxation of underwriting guidelines; and a proliferation of alternative mortgage products created to meet market demand.

A. Low Interest Rates Expanded the Pool of Eligible Borrowers and Resulted in Increased House Prices

36. A reduction in mortgage rates reduces the cost of borrowing, making homes more affordable—which expands the pool of eligible borrowers beyond those who would otherwise become homeowners.

37. A dramatic reduction in mortgage rates occurred during the period 2000 to 2005. This resulted principally from two factors.

38. First, following the collapse of the Internet bubble in 2000 and the terrorist attacks of September 11, 2001, and with growing concern about the possibility of deflation, the Federal Open Market Committee of the Federal Reserve (the "Fed") set progressively lower targets for the federal funds rate. The federal funds rate is a baseline interest rate that influences most

lending activity, including mortgage lending. The low federal funds rate contributed downward pressure on already low mortgage rates, driving the rate on traditional 30-year fixed-rate mortgages to historic lows. DX-2748 charts the federal funds target rate, the traditional 30-year fixed-rate mortgage rate and the 10-year Treasury rate from 1971 through 2013. As shown by DX-2748[11] the federal funds rate was lowered from almost 8 percent to about 1 percent from 2001 to 2004. As the Fed lowered the federal funds rate, mortgage rates for 30-year fixed-rate mortgages dropped from around 8 percent to around 6 percent.

39. Second, increased foreign investment in U.S. securities during the period 2002 to 2006 added further downward pressure on interest rates.[12] For example, the share of all U.S. Treasuries held by Asian investors grew from 15 percent in 2000 to 32 percent in 2006.[13]

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[11] The charts and graphs cited herein and provided by defendants as DX-2730 through DX-2777, DX-2792 through DX-2797 and DX-2821 through DX-2823 present data provided by sources commonly relied upon by experts in my field, economists and the public for the statistics included in each of the charts and graphs. These sources include: (i) the U.S. Census Bureau (ii) Board of Governors of the Federal Reserve System, (iii) Inside Mortgage Finance, the 2011, 2012 and 2013 Mortgage Market Statistical Annual CD-ROM, (iv) the U.S. Department of Housing and Urban Development, (v) the Office of Federal Housing Enterprise Oversight, (vi) Freddie Mac's and Fannie Mae's SEC Form 10-Ks for the years 2003 through 2013, (vii) the Office of the Comptroller of the Currency, Survey of Underwriting Practices for June 2002, August 2010, June 2011, June 2012, and January 2014, (viii) Bloomberg, (ix) the National Bureau of Economic Research, (x) the Federal Reserve Bank of St. Louis, (xi) the Bureau of Labor Statistics, (xii) Freddie Mac, Refinance Activities Reports: Cash Out Volume Quarterly, (xiii) HMDA Data Files, (xiv) Federal Housing Finance Agency, Monthly House Price Indexes for Census Divisions and U.S. Purchase-Only Index, (xv) National Association of Realtors, First-Time Homebuyer Affordability for U.S. 1989-2014, (xvi) National Association of Realtors, (xvii) National Council of Real Estate Investment Fiduciaries, (xviii) CoreLogic, (xix) Mortgage Bankers Association, and (xx) Bureau of Labor Statistics. The data on which I rely covers a number of years, often more than a decade.

[12] Janet Yellen, "A View of the Economic Crisis and the Federal Reserve's Response," FRBSF Economic Letter 2009-22, July 6, 2009, p.1

[13] Ashok Bardhan and Dwight Jaffee, "The Impact of Global Capital Flows and Foreign Financing on U.S. Mortgage and Treasury Interest Rates," The Research Institute for Housing America of the Mortgage Bankers Association, June 12, 2007, pp.8-9.

40. Expanding the pool of eligible borrowers through lower mortgage rates increased demand for homes, which caused house prices to rise. A study by economists at the National Bureau of Economic Research attributed approximately 20 percent of the rise in U.S. home prices between 1996 and 2006 to the effect of lower real interest rates.[14]

B. Increased Availability of Adjustable-Rate Mortgages with Low Initial Rates Made Homes More Affordable, Increasing Demand

41. Adjustable-rate mortgages ("ARMs"), which traditionally have grown in popularity during rising interest rate environments, hovered between 20 and 30 percent of the market through much of the 1990s and early 2000s. DX-2746 is a graph of ARMs as the percentage of all residential mortgage loan originations, as well as and the mortgage rate for 30-year fixed-rate conventional mortgages for the period of 1990 through 2013. As shown by DX-2746, by 2004 the popularity of ARMs had nearly doubled, reaching more than 50 percent of the market—a share that persisted through 2006.

42. Curiously, the percentage of ARMs grew even as interest rates on 30-year fixed-rate mortgages remained relatively low by historical standards, as shown in DX-2746. The sudden growth in popularity in a relatively stable rate environment reflects borrowers' increased reliance on the low initial rates offered by ARMs (coupled with expectations of continued home-price appreciation) to enhance the affordability of homes. Some have also theorized that the growth in popularity of ARMs during this period may have been attributable in part to an

[14] Edward Glaeser, *et al.*, "Can Cheap Credit Explain the Housing Boom," National Bureau of Economic Research, Working Paper 16230 (July 2010).

increase in borrowers with short investment horizons (or short expected tenancy in their homes), and therefore a need for a shorter period of interest-rate protection.[15]

C. Low Unemployment and High Consumer Confidence Increased Demand for Residential Mortgages

43. The Fed's actions in reducing interest rates in the early 2000s worked as intended, and were followed by a period of economic expansion. In 2002, the U.S. economy pulled out of a brief recession, and grew at an average annual rate of approximately 3 percent through 2007. This growth is shown by DX-2751, which provides the real gross domestic product ("GDP") growth rate for the U.S. from 1990 until the fourth quarter of 2013. GDP is one of the primary measures of the health of the economy. It represents the total dollar value of all goods and services produced over a specific time period, typically measured in the U.S. by quarters.

44. Meanwhile, unemployment fell from a near-term peak of 6.3 percent in June 2003 to 4.4 percent in May 2007. Similarly, the labor underutilization rate fell from approximately 10 percent to 8 percent in June 2003 to May 2007. The labor underutilization rate is defined by the U.S. Bureau of Labor Statistics as the "total unemployed, plus all marginally attached workers [workers overqualified for the positions], plus total unemployed part time [part-time workers] of the civilian labor force." The drops in the unemployment rate and in the underutilization rate are demonstrated by DX-2752, which is a graph of these rates from 2000 until 2013.

45. With an improving economy, consumers grew increasingly optimistic. The Consumer Confidence Index ("CCI"), a barometer of consumer perceptions of the health of the U.S. economy, improved from a low of 68 in March 2003, following the early 2000s recession,

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[15] *See, e.g.*, Michael Fratantoni, et al., "Housing and Mortgage Markets: An Analysis," Mortgage Bankers Association, September 6, 2005, p. 50–51.

to 110 in February 2007. DX-2753 provides a chart of the CCI from 2000 through 2013, which demonstrates this dramatic increase.

46. Low unemployment, high consumer confidence, and appreciating home prices translated into a willingness on the part of consumers to spend. Two key indicators, personal consumption expenditures and durable goods orders, both exhibited strong growth between 2003 and 2007. DX-2754 is a graphical representation of these two rates, where this growth can be seen, and provides the two indicators for the years 2000 through 2013. One can also infer the tendency of consumers to spend by measuring their tendency to save. In the early 1990s, the consumer personal savings rate ranged from approximately 7 to 10 percent of income; by 2005, that rate had fallen to as low as 2 percent. DX-2755 is a chart of the personal savings rate from January 1990 through December 2013.

47. Not surprisingly, consumers during this time period also exhibited a greater willingness to take on mortgage debt. Among other things, the sharp decline in mortgage interest rates led many borrowers to refinance existing mortgages, often "cashing out" some or all of the accumulated equity in their homes. Freddie Mac estimates that homeowners cashed out approximately $823 billion in home equity in the period of 2005 to 2007. This is demonstrated by DX-2756, which is a chart of the volume of home equity cashed out—the estimated dollar volume of equity extracted through the refinancing of prime, first-lien conventional mortgages. (It does not include equity extracted through the refinancing of FHA and VA loans or loans originated in the subprime market.) The volume of home equity cashed out is provided by Freddie Mac, which produces Refinance Activities Reports for the industry as shown on DX-2756. Consumers' ability to extract home equity during this period was an important contributor to robust consumer spending and heightened consumer confidence.

D. Government Policies Successfully Encouraged Homeownership by Low- and Moderate-Income Borrowers

48. Homeownership has long been considered by many to be an integral part of the American Dream, and the U.S. government has for many years encouraged homeownership through a combination of tax incentives, regulatory initiatives, public programs, and public-private partnerships. These policies increased housing demand and the accelerated house price appreciation during the period 2000 to 2006.

49. Since the Tax Reform Act of 1986 (the "TRA"), which allowed taxpayers to continue to deduct mortgage interest (even on home equity loans under certain conditions) but eliminated the deduction of interest on other types of consumer loans, mortgage debt has been a bargain relative to other consumer loans.

50. More recent government policies have encouraged homeownership for low- and moderate-income borrowers in particular. I discuss some of these policies below. Homeownership gains during the period 2000 to 2006 were observed across numerous demographic groups, including low-income borrowers.

51. The Clinton Administration, for example, initiated both the National Homeownership Strategy (in 1995) and the Passport to Homeownership (in 1999), both of which were designed to make buying homes easier and more affordable.[16]

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[16] William J. Clinton, "Remarks on the National Homeownership Strategy," June 5, 1995 <www.presidency.ucsb.edu/ws/?pid=51448> (accessed July 9, 2014); U.S. Department of Housing and Urban Development, "HUD and MBA Announce Passport to Homeownership Initiative to Educate Consumers About the Mortgage Lending Process," November 12, 1999 <http://archives.hud.gov/news/1999/pr99-231.html> (accessed July 9, 2014).

52. The Bush Administration created the American Dream Down Payment Fund (signed into law in 2003), which provided $200 million annually to help first-time home buyers with down payments and closing costs.[17]

53. Throughout the housing boom of 2000 through 2006, Federal Housing Administration guidelines permitted homebuyers to borrow up to 97 percent of the appraised value of a house.[18]

54. The landmark Community Reinvestment Act of 1977 (the "CRA") required federally insured banking institutions to "help meet the credit needs of the communities in which they operate, including low- and moderate-income neighborhoods, consistent with safe and sound banking operations."[19] Following the release of a 1992 study by the Federal Reserve Bank of Boston documenting alleged racial discrimination in mortgage lending among Boston-area banks, the federal government undertook a number of actions to increase enforcement of the

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[17] The White House, "President Focuses on Home-Ownership in Radio Address," June 15, 2002, <http://georgewbush-whitehouse.archives.gov/news/releases/2002/06/20020615.html> (accessed July 9, 2014); U.S. Department of Housing and Urban Development, "American Dream Downpayment Initiative," <http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/programs/home/addi> (accessed July 9, 2014).

[18] The FHA lowered the down payment requirement to five percent in the 1950s and to three percent in 1961. Kerry D. Vandell, "FHA Restructuring Proposals: Alternatives and Implications," Housing Policy Debate, vol. 6, no. 2 (1995), pp. 299–393, at 303–304. In 2008, the minimum down payment was increased to 3.5 percent. N. Eric Weiss, *et al.*, CRS Report for Congress: Housing and Economic Recovery Act of 2008, Congressional Research Service, August 19, 2008, p. 14, available at <http://assets.opencrs.com/rpts/RL34623_20080819.pdf> (accessed July 9, 2014).

[19] Federal Financial Institutions Examination Council, "Community Reinvestment Act: Background and Purpose," <http://www.ffiec.gov/CRA/history.htm> (accessed July 9, 2014). *See also* Robert B. Avery, Paul S. Calem, and Glenn B. Canner, "The Effects of the Community Reinvestment Act on Local Communities," Board of Governors of the Federal Reserve System, Division of Research and Statistics, March 20, 2003, p. 1

CRA.[20] The Fed, for example, denied several banks' applications to open new branches or merge with other banks due to inadequate performance under the CRA.[21] During the late 1990s, the Clinton Administration pushed for stricter adherence to the CRA by stepping up enforcement of fair housing and fair lending laws.[22] Actions such as these gave lenders a powerful incentive to turn their attention toward underserved neighborhoods.

~~55. Freddie Mac and Fannie Mae ultimately loosened underwriting standards on the loans they purchased. In 1999, for example, under pressure from the Clinton administration, Fannie Mae announced that it would reduce credit requirements on the mortgage loans it purchased, thereby encouraging lenders to offer loans to borrowers with lower credit scores. Borrowers would pay rates only one percentage point higher than rates on conventional mortgages, and have the one-point premium dropped after two years of timely payments. Then-chairman and chief executive officer of Fannie Mae, Franklin Raines, announced that the purpose of the program was to increase the affordability and availability of homes.[23]~~

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[20] Peter Passell, "Race, Mortgages and Statistics; The Unending Debate Over a Study of Lending Bias," The New York Times, May 10, 1996 (discussing Alicia H. Munnell, et al., "Mortgage Lending in Boston: Interpreting HMDA Data," *The American Economic Review*, vol. 86, no. 1 (March 1996), pp. 25–53).

[21] *See, e.g.*, "Fed Denies Gore-Bronson Bancorp Acquisition Plan," Dow Jones News Service, August 13, 1992; "Fed Cites Bias in Denying Branch Application," Los Angeles Times, February 10, 1993; and "Fed Bars Acquisitions," *The Wall Street Journal*, May 19, 1993.

[22] *See, e.g.*, Ronald Brownstein, "Minorities' Home Ownership Booms Under Clinton but Still Lags Whites'," Los Angeles Times, May 31, 1999; and Peter Passell, "Race, Mortgages and Statistics; The Unending Debate Over a Study of Lending Bias," *The New York Times*, May 10, 1996.

[23] ~~Steven A. Holmes, "Fannie Mae Eases Credit to Aid Mortgage Lending," *The New York Times*, Sept. 30, 1999.~~

56. In its 2000 Report to Congress, the Office of Housing Enterprise Oversight ("OFHEO"), the predecessor of FHFA, described the changes Fannie and Freddie had undertaken:

> In an effort to increase the volume of mortgages they purchase, Fannie Mae and Freddie Mac have expanded the range of loans they buy. Both Enterprises have introduced new products such as low-downpayment and reverse mortgages. Fannie Mae and Freddie Mac have also purchased loans that they previously deemed to pose an unacceptable level of credit risk, including some subprime mortgages.

(DX-2572 at 13.)[24]

57. From late 2003 through 2006, there was a sharp fall in Freddie Mac's and Fannie Mae's whole loan purchases and securitization of whole loans, accompanied by the purchase of AAA tranches of private-label subprime and Alt-A RMBS related derivatives.[25] From 2003 through 2006, those purchases totaled more than $593 billion, and accounted for as much as 47.9 percent of the total volume (in dollars) of private-label issuers' securitizations.[26] DX- 2739

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[24] I understand from counsel that on December 18, 2014, the Court excluded evidence concerning "the housing goals set for Fannie Mae and Freddie Mac by the United States Department of Housing and Urban Development" on the basis that the probative value of that evidence was outweighed by the danger of jury confusion. As a result, I have excluded testimony that would otherwise appear here that housing goals contributed to Freddie Mac's and Fannie Mae's motivation to continue buying risky private-label RMBS even as house prices began fluctuating.

[25] Richard J. Buttimer, Jr., "The financial crisis: imperfect markets and imperfect regulation," *Journal of Financial Economic Policy*, vol. 3, no. 1 (2011), pp. 21–22 & n.28.

[26] I note that in the Court's opinion and order dated February 10, 2015 excluding my benchmark analyses, the court stated on footnote 5 pages 7 to 8 that: "In addition, the GSEs were subject to affordable housing goals set by the United States Department of Housing and Urban Development that required, for example, the purchase of loans to lower-income borrowers that are owner occupied and in metropolitan areas. The GSEs' decisions to purchase mortgage loans were, at times, influenced by the GSE's desire to purchase loans that met these housing goals." Doc. No. 1248.

presents these numbers for these four years and the total number of RMBS issued and purchased by Freddie Mac and Fannie Mae. By the end of 2006, Freddie Mac's and Fannie Mae's combined holdings of private-label RMBS had more than tripled, from $98.8 billion to $312.1 billion in 2006. DX-2740 is a graphical representation of both Freddie Mac's and Fannie Mae's holdings of private-label RMBS annually for the period of 2001 through 2013.

E. An Expansion of Underwriting Guidelines Increased the Pool of Eligible Borrowers, Resulting in Increased House Prices

58. Underwriting guidelines, which vary from originator to originator, specify the parameters or benchmarks that are generally to be followed (subject to exceptions) by underwriters when issuing a mortgage loan and setting its terms. Typical benchmarks include LTV ratio, debt-to-income ratio, property type, and occupancy type, as well as credit scores.

59. Responding to the regulatory, economic, and competitive factors discussed above, including government policies encouraging homeownership by low- and moderate-income borrowers, mortgage lenders began to loosen their underwriting guidelines during the period 2000 to 2006, issuing mortgage loans with increasingly varied loan, property, and borrower characteristics. As set forth in paragraphs 60 to 66, below, these changes were widely reported, understood and tracked by industry analysts, regulators, and market participants.

60. For example, in its annual survey of credit underwriting practices, the Office of the Comptroller of the Currency ("OCC") asks its bank examiners to evaluate trends in lending standards and credit risk at large national banks. The survey is conducted annually and includes assessments of credit underwriting standards at the largest national banks in the U.S. "Underwriting" as used in the survey refers to "the terms and conditions under which banks extend or renew credit, such as financial and collateral requirements, repayment programs, maturities, pricing, and covenants." The conclusions in the survey about "easing" or

"tightening" of credit represent observations of the OCC examiners during a 12-month period.[27] DX- 2741 is a graphical representation depicting percentages of respondents to the OCC's survey from 1996 through 2013 that had changed their underwriting standards for residential real estate loans. DX-2742 demonstrates these changes for affordable housing loans and DX-2743 demonstrates these changes for high LTV home equity loans. During the period 2003 to 2006, as shown by DX-2741 and DX-2743, the OCC found that a generally increasing percentage of respondents were easing underwriting standards by, among other things, lengthening loan amortization schedules, lowering credit score guidelines, or raising limits on debt-to-income ratios and loan-to-value ratios.

61. In addition, loan originators made an increasing number of loans involving multiple "layers" of risk. Risk layering, as the name suggests, involves two or more loan-level characteristics that, when taken together, present a heightened risk of loss to the owner of the loan. For example, low down payments (or high LTV ratios) combined with low introductory interest rates or low or no income documentation (among many other possible combinations) could present layered risk. (The proliferation of new mortgage products, including low- and no-income documentation loans, is discussed below.) In the first half of 2005, for example, Goldman Sachs reported that 25 percent of low-documentation loans were originated with

[27] Office of the Comptroller of the Currency, Survey of Credit Underwriting Practices, June 2011, p. 2.

piggyback seconds,[28] more than four times the percentage reported in 2003, while 21 percent carried LTV ratios higher than 80 percent, three times the percentage reported in 2003.[29]

62. Related to the expansion of underwriting guidelines was the significant growth of what is generally referred to as the subprime market. Although no uniform standard exists to define the loans or borrowers included in the subprime market, subprime broadly refers to loans made to borrowers with poor credit histories and, therefore, a higher risk of default than more-creditworthy "prime" borrowers.[30] The volume of subprime lending increased dramatically in the early 2000s. One reliable industry source, Inside Mortgage Finance, estimates that subprime lending grew more than six-fold in just five years, from an estimated $100 billion in 2000 to $625 billion in 2005. DX-2744 is a graphical representation of this increase using data from Inside Mortgage Finance. During the period 2003 to 2005 alone, the number of subprime loans nearly doubled, from 1.1 million to 1.9 million.[31] By dollar volume, subprime loans as a

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[28] "Piggyback seconds" are a type of second-lien mortgage used at purchase to reduce the borrower's down payment, typically eliminating the need for private mortgage insurance. Jack P. Friedman, *et al.*, Dictionary of Real Estate Terms, p. 437 (7th ed. Barron's Educational Series, Inc. 2008).

[29] Goldman Sachs, "Housing Conference Insights" Mortgage Volume & Margin Pressure, Stable Credit," December 1, 2005, p. 14.

[30] Much of the data for the exhibits cited in this section derive from Inside Mortgage Finance, a publisher of news and data related to the residential mortgage business. *See* Inside Mortgage Finance, "About Us," <http://www.insidemortgagefinance.com/about/> (accessed July 9, 2014). I understand that the data are compiled from surveys of mortgage lenders and other industry sources, whose definitions of "subprime" may vary. The publisher states that subprime loans "are tied to borrowers' credit ratings, expressed as letter grades, such as A–, B, D." Inside Mortgage Finance, The 2012 Mortgage Market Statistical Annual CD-ROM, Glossary. Experts in my field commonly rely on data from Inside Mortgage Finance in forming opinions concerning the mortgage market and loan performance.

[31] Christopher Mayer, Karen Pace, and Shane M. Sherlund, "The Rise in Mortgage Defaults," *Journal of Economic Perspectives*, vol. 23, no. 1 (Winter 2009), p. 29, Table 1.

percentage of all new mortgage loans grew from 9.5 percent in 2000 to 20 percent in 2005. DX-2745 demonstrates this increasing percentage of subprime loans through a graphical representation of the share of residential mortgage loan originations by loan type. DX-2745 charts (i) conventional/conforming, (ii) FHA/VA, (iii) Jumbo, (iv) Alt-A, (v) subprime and (vi) home equity loan types as a percentage of the residential mortgage originations for the years 1990 through 2012. The growth of the subprime market contributed to increased demand for homes and mortgages (and increased house prices) by expanding the number of eligible borrowers.

63. There also was a significant expansion in the Alt-A market during the period 2000 to 2006. Alt-A generally refers to loans that are more risky than prime loans but less risky than subprime. These mortgages, which had comprised less than two percent of the market for much of the 1990's, grew to 13.4 percent of the market by 2006. DX-2745 demonstrates this substantial percentage increase in Alt-A loans based on data from Inside Mortgage Finance, The 2012 and 2013 Mortgage Market Statistical Annual CD-ROMs, Volume 1B.

64. Beginning in the early 2000s, lenders also increased their offerings of non-traditional mortgage products, such as interest-only loans, "pay-option" loans, and low- or no-documentation loans. I also include in this category loans made for purposes other than the purchase of a home, such as Closed-End Second Liens ("CESL"). Such products appealed to two types of borrowers: those with adequate credit but atypical borrowing needs or constraints, and those with impaired credit who could not qualify for traditional loans. Low- and no-documentation loans, for example, could be attractive to borrowers with difficult to document income or assets (such as the self-employed) who were willing to pay a premium to shorten and simplify the loan application process. For borrowers with short expected investment horizons (or

a short expected stay in their current home), the low initial rates of adjustable-rate mortgages may have been appealing. CESLs allowed homeowners to borrow against their homes and benefit from favorable tax treatment by deducting interest payments.

65. ~~Finally, Freddie Mac's and Fannie Mae's demand for housing-goals-compliant loans and mortgage-related securities also contributed to the proliferation of non-traditional mortgage products.~~ As I discussed above, beginning in 2004 Freddie Mac and Fannie Mae cut their purchases and securitizations of whole loans and increased their purchases of private-label RMBS. *See* ¶¶ 56-57, *supra*. (*See also* DX-2740.) Partly in response to Freddie Mac and Fannie Mae, private-label RMBS issuers increased their purchase and securitization of Alt-A and subprime loans (as well as second mortgages), which grew from a total of $289 billion in 2003 to $889 billion in 2006. DX-2747 shows this increase, combining subprime and Alt-A mortgages. DX- 2747 represents all non-agency securitizations of residential mortgages by type annually from 1995 through 2012. DX-2747 represents five types of residential mortgages: (i) prime, (ii) subprime, (iii) other, (iv) Alt-A, and (v) subprime. As purchases of subprime and other non-prime RMBS increased, lenders' incentive to originate such loans increased.

66. During this period of loosening underwriting guidelines, conventional mortgage loans lost market share. They fell to just one-third of the market by 2006, from historical norms of approximately 50 to 60 percent. DX- 2745, described in paragraphs 62 and 63 of my testimony, demonstrates this decline in conventional mortgage loans.

F. Increased Demand for Mortgages and Mortgage Investments In the Secondary Market Increased The Supply of Credit

67. From 1995 to 2003, Freddie Mac's and Fannie Mae's purchase and securitization of whole loans increased dramatically, from a combined total of approximately $269 billion to more than $2.1 trillion, an increase of almost 800 percent. DX-2736 demonstrates this dramatic

increase by presenting the aggregate value of residential mortgage loan securitizations annually for the years 1990 through 2012 and detailing the agency[32] and non-agency amounts for each year.

68. During the ensuing three years, from 2004 through 2006, agency purchases of whole loans declined. In 2004, Freddie Mac and Fannie Mae purchased and securitized just over $1 trillion in residential mortgage loans, less than half the total from just one year earlier. . Freddie Mac and Fannie Mae also purchased and securitized a smaller percentage of new mortgage loan originations, falling from a peak of 54 percent in 2003 to less than 35 percent in 2004, and to just over 30 percent in both 2005 and 2006. DX-2737 presents agency and non-agency RMBS issuances as a percentage of new residential mortgage loan originations as well as the combined percentage annually for the years 1990 through 2012. DX-2737 demonstrates the decrease in securitizations by Freddie Mac and Fannie Mae.

69. Although their purchases and securitization of whole loans fell sharply in 2003 through 2006 (as discussed above, in paragraph 57), Fannie Mae and Freddie Mac were at the same time increasing their purchases of private-label subprime RMBS.

70. Freddie Mac and Fannie Mae purchased these private-label subprime RMBS for a number of reasons, including: (i) attractive yields, (ii) the attractiveness of AAA tranche investment grade securities, and (iii) to increase market share.[33]

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[32] Agency securities are defined by Inside Mortgage Finance, the provider of this data, as securities issued by either Ginnie Mae, Fannie Mae, Freddie Mac or the Federal Home Loan Banks.

[33] ~~Freddie Mac, Proxy Statement, June 14, 2005, p. 29. I understand from counsel that on December 18, 2014, the Court excluded evidence concerning "the housing goals set for Fannie Mae and Freddie Mac by the United States Department of Housing and Urban Development" on the basis that the probative value of that evidence was outweighed by the danger of jury confusion. Doc. No. 994. I have therefore excluded testimony here to the effect that that~~

(*footnote continued*)

71. Buoyed by favorable economic conditions, as well as the steady increase in house prices, during the period 2000 to 2006, securities investors (to be distinguished from the real estate investors I mentioned earlier) increasingly regarded RMBS as high-value, low-risk investments. Higher investor demand drove growth in the securitization market. DX-2736 demonstrates this increase by presenting the aggregate value of residential mortgage loan securitizations annually for the years 1990 through 2012 and detailing the agency and non-agency amounts for each year.

72. Securitization of residential mortgage loans increased dramatically beginning in the mid-1990s, peaking at more than $2.7 trillion in 2003. After falling back somewhat in 2004, volumes again topped $2.0 trillion in 2005 and 2006. (*See* DX-2736 (described above).) Similarly, through the 1990s and early 2000s, typically 50 to 60 percent of new mortgage originations were securitized; by 2003, the rate was 67.5 percent, indicating that investor demand for RMBS outpaced even the growing demand for homes and mortgage loans.

73. A breakdown of year-over-year changes in RMBS holdings across several categories of investors indicates that demand was widespread. From 2003 through 2007, depository banks, foreign investors, mutual funds, and life insurers all generally increased their holdings of mortgage-related investments. Such institutions could purchase such securities because they were investment grade. DX-2750 presents this information by showing the year-over-year change for the years 2000 through 2008 in holdings of mortgage-related securities by investor type using six types of investors: (i) Freddie Mac and Fannie Mae, (ii) depositories, (iii) mutual funds, (iv) life insurers, (v) others, and (vi) foreign investors.

(footnote continued)
~~housing goals drove Freddie Mac and Fannie Mae to continue buying risky private-label RMBS even as house prices began fluctuating.~~

G. The Increased Demand for Mortgages, Broader Eligibility Standards, and Growing Supply of Credit Drove Up House Prices

74. Through the early 1990s, the homeownership rate in the U.S. hovered at approximately 64 percent. In 1995, it began to rise, reaching a peak in 2004 of approximately 69 percent. DX-2730 demonstrates this rise by presenting the homeownership rate by income from the first quarter of 1994 through the fourth quarter of 2013.

75. Triggered in part by the increase in demand for homes, as well as a steady decline in long-term interest rates, house prices in the U.S. began to appreciate rapidly beginning around 2000. From 1945 through the end of 1999, house prices in the U.S. had grown at an average annual rate of approximately 4.9 percent; from 2000 through the end of 2005, house prices grew at more than twice that rate, an average of 11.3 percent per year.[34] DX- 2732 demonstrates this dramatic growth by presenting the S&P/Case-Shiller 10-City Composite Home Price Index from January 1990 through December 2013 and includes a representation of the house prices in Los Angeles, Miami, Las Vegas and Phoenix. In some cities, the growth rate was even higher. As shown by DX-2732, house prices in Los Angeles, and Las Vegas were higher than the 10-City Composite.

76. House price appreciation and expanded homeownership were accompanied by rapid growth of the mortgage lending market. From 2000 through the first quarter of 2008, aggregate mortgage debt in the United States more than doubled, from approximately $4.5

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[34] The house price statistics quoted in this testimony and the data used to develop the accompanying exhibits derive generally from Case-Shiller Home Price Indices, available at <http://us.spindices.com/index-family/real-estate/spcase-shiller> (accessed July 9, 2014), or data available at Robert J. Shiller's website <http://irrationalexuberance.com/> (accessed July 9, 2014). Experts in my field commonly rely on the Case-Shiller Home Price Indices and data from Professor Shiller's website in forming opinions concerning the mortgage market and loan performance. Other house price indices generally followed similar trends.

trillion to $10.7 trillion. DX-2733 demonstrates the amount of home mortgage debt outstanding in billions of dollars. The dramatic doubling of the debt can be seen from 2000 to 2008 in DX-2734. As a percentage of GDP, mortgage debt grew from less than 50 percent in the late 1990s to almost 80 percent in 2007. DX-2733 shows outstanding home mortgage debt as a percentage of GDP for the years 1990 through 2012, with a peak of 77.6 percent in 2007. The increase included significant growth in the volume of both loans used to purchase a home and loans taken against the value of a home for purposes other than purchase. Total origination volume for all residential mortgage loan types, including first- and second-lien mortgages, grew from just over $1 trillion in 2000 to almost $4 trillion in 2003, including a refinance volume of more than $2.8 trillion. DX-2735 shows the aggregate value of residential mortgage loans in billions of dollars annually from 1990 through 2012 and depicts the increase in total origination volume.

V. The Declining Housing Market, Precipitous House Price Depreciation Beginning in About April 2007, and the Economic Downturn Led to Borrower Delinquencies and Defaults

77. In early 2006, the steady increase in U.S. house prices stalled. Despite a growing economy and continued growth of the secondary mortgage market, uncertainty in the housing market set in. For 13 months, following a peak in April 2006, the Case-Shiller 10-City Composite[35] and the FHFA House Price Index ("HPI") (then called the "OFHEO House Price Index" published by FHFA's predecessor, the Office of Federal Housing Enterprise Oversight), two of the most widely watched house price indices in the U.S., fluctuated, offering often contradictory data on the direction of house prices and spurring uncertainty in the market. DX-

[35] The Case-Shiller 10-City Composite index tracks monthly changes in the value of the residential real estate market in 10 metropolitan regions (Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco and Washington, D.C.), and is the most widely used index among economists and others studying house prices. It captures the diversity of the major U.S. metropolitan housing areas.

2758 demonstrates this fluctuation by charting the FHFA HPI and Case-Shiller 10-City Composite Home Price Index from 2005 through 2013.

78. In April 2007, both indices headed sharply downward.[36] In one 26-month period, from April 2007 through May 2009, house prices in the U.S. fell by nearly 33 percent. The Case- Shiller 10-city Composite index fell each month during that period. In all, prices that had fallen only once on a year-over-year basis since the end of World War II would fall in six consecutive years, from 2006 through 2011.[37] DX-2759 demonstrates the house price decline for the composite home price index in terms of annual percentages of change for the years 1945 through 2013. In total, DX-2759 shows a decline of nearly 33 percent from 2006 through 2011. As the housing decline progressed, losses and write-downs occurred across the entire financial sector. Globally, financial institutions attributed an estimated $2.1 trillion of losses and write-downs to the mortgage market decline and subsequent turmoil in the financial markets.[38]

79. It is my understanding that Freddie Mac, through counsel of record, submitted a brief on September 23, 2009 to Hon. John F. Keenan, in the United States District for the Southern District of New York in support of its motion to dismiss claims brought against it by its stockholders for violations of the Securities Exchange Act of 1934 in *Kuriakose* v. *Federal*

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[36] In some cities it began to decline even earlier. In Phoenix, San Diego, and Detroit, home prices had begun to fall as early as April 2006, and only one monthly increase occurred from that point through May 2009. *See* S&P/Case-Shiller Home Price Indices (Composite 10).

[37] Based on data compiled by Robert J. Shiller, shown in DX-2730. Other indices such as the OFHEO purchase-only index, may lead to somewhat different conclusions. Regardless, the house price decline observed from 2006 through 2011 was the longest and deepest decline since World War II.

[38] Bloomberg Write Downs and Credit Losses Index (Ticker: WDCI). The WDCI tracked the write downs and losses related to the financial crisis in 110 of the largest financial institutions globally.

Home Loan Mortgage Corp. In that brief, which is DX 860, and which I have reviewed, Freddie Mac states:

> This unusually steep increase in house prices came to an abrupt end in 2007. . . . Even in mid-2007, however, few predicted the extent to which house prices would decline. Indeed, as Reuters reported on April 20, 2007: "U.S. Treasury Secretary Henry Paulson said on Friday the housing market correction appears to be at or near its bottom and that trouble in the subprime mortgage market will not likely spread throughout the economy." Of course, Secretary Paulson did not have the benefit of a crystal ball, and neither did Freddie Mac. . . . In 2007, house prices ultimately fell far more sharply than ever before in U.S. history. . . . In the third quarter of 2007, and the month of October 2007, in particular, the year-over-year housing-price declines nationwide were the largest on record. . . . Not surprisingly, the precipitous decline in house prices and the tight credit market caused massive losses across the entire financial industry, including at the country's largest and most respected mortgage lenders and investors.

DX 860 at 10 (citations omitted).

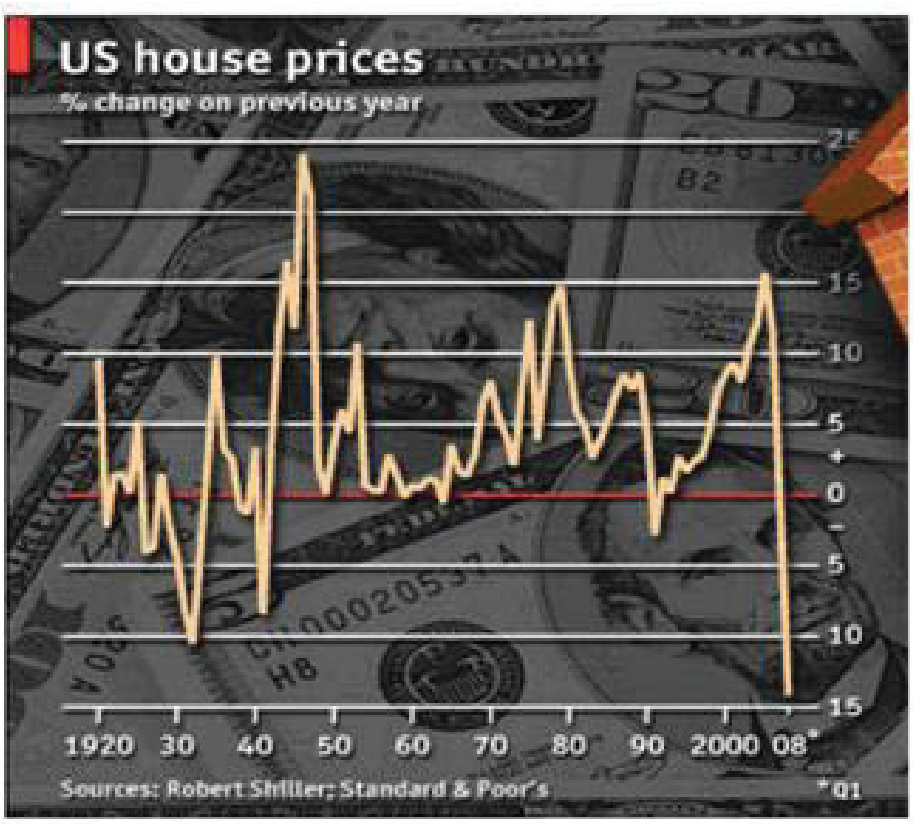
80. In the same brief submitted to the United States District Court for the Southern District of New York on September 23, 2009 referenced in the previous paragraph, Freddie Mac stated:

> It is common knowledge that, beginning in the latter half of 2007, this country entered a period of unprecedented financial turmoil. Real estate values plummeted, and credit markets froze. Just as [it] had warned investors, its financial results and its stock price suffered after those macroeconomic events unexpectedly tore through the U.S. economy. Indeed, virtually every major financial institution in the country was surprised by these historically anomalous developments and incurred losses similar to, or greater than, those incurred by Freddie Mac.

DX 860 at 1. Freddie Mac represented to the court that it had "repeatedly and extensively warned investors that, if real estate values declined, or credit tightened, or interest rates changed, it was likely to incur unavoidable losses" but "in 2007, this country was blindsided by the single largest decline in single-home values in recorded history." (DX-860 at 3.) I understand that

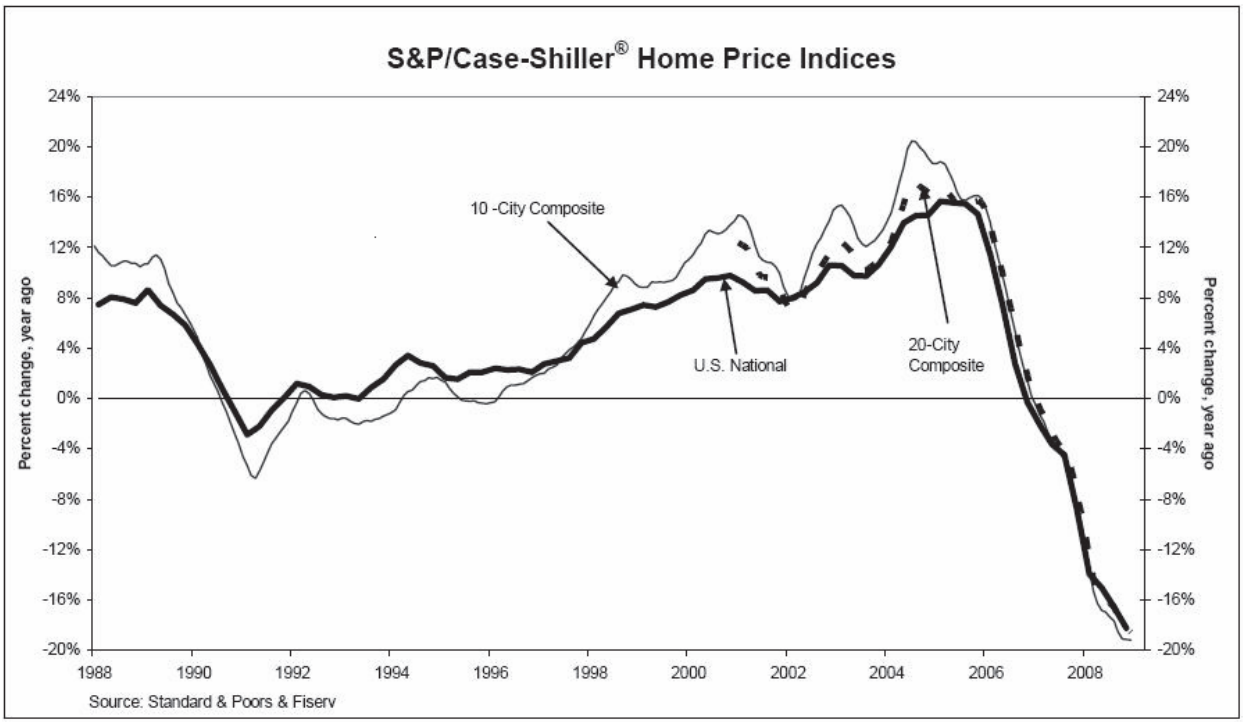
Freddie Mac was successful in obtaining dismissal of the securities fraud claims asserted against it, apparently based at least in part on the arguments made in this brief.

81. I am also reproducing here a chart used by Freddie Mac in the same brief filed in support of its motion to dismiss on September 23, 2009. DX- 860 at page 3 contains the below chart. It shows the dramatic change that occurred during the period of approximately 2005 to 2008, when house prices shifted from increasing by more than 15 percent per year to decreasing by almost 15 percent per year.



82. I am also reproducing a second chart used by Freddie Mac in another brief that it filed in the same case on October 13, 2011 in support of its motion to dismiss the second amended complaint, which I understand was also successful in getting the securities fraud claims dismissed. DX- 919 at page 3 shows three different indices from S&P/Case-Shiller: the U.S.

national index, the 10-City Composite Index and 20-City Composite. Those indices demonstrate the sharp decline in house prices experienced between 2006 and 2008.



This chart appears on page 3 in the Freddie Mac brief dated October 13, 2011.

83. The ensuing recession lasted one and a half years, from December 2007 to June 2009, making it the longest recession since the Great Depression of the 1930s. Over the course of the recession, real GDP, a broad and commonly used measure of economic activity, contracted by approximately 4.3 percent, including a 2.2 percent drop in the fourth quarter of 2008 alone. DX- 2751 shows this dramatic drop in economic activity through a graphical representation of real GDP growth from the first quarter of 1990 through the first quarter of 2013.

84. With the economic contraction came significant job losses. By the fourth quarter of 2009, unemployment in the U.S. had more than doubled, from 4.4 percent in May 2007 to

10.0 percent, representing a net loss of more than 7 million jobs.[39] By 2009, unemployment had reached its highest level in more than 25 years. DX- 2752 shows the unemployment and labor underutilization rates from 2000 through 2013. Labor underutilization rates account for the unemployed as well as those who are in an employment situation that is insufficient in some important way for the worker, relative to certain standards. The labor underutilization rate tracked the same trends as the unemployment rate during the economic boom and recession, as shown by DX- 2752. Job losses contributed both to falling demand in the housing and mortgage markets and to an increased incidence of delinquency and default by mortgage borrowers, which only served to reinforce the downward spiral in house prices.

85. Consumer confidence, as measured by the CCI, dropped from its high of 110 in February 2007 to a low of approximately 30 in 2009. Similarly, the stock market reflected this dramatic loss of consumer confidence. The S&P Index, which includes 500 leading companies and captures approximately 80 percent of the available market capitalization, dropped by 57 percent from peak-to-trough during the crisis.

86. The factors contributing to the contraction of the housing market and the decline in house prices were numerous and mutually reinforcing: Higher prices and higher interest rates led to a softening of demand for homes; falling demand, coupled with an overhang of supply, put downward pressure on house prices; falling prices led to negative equity, which together with newly tighter underwriting standards limited the ability of homeowners to refinance existing loans. As the economy soured and unemployment soared, defaults and foreclosures increased;

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[39] The number of unemployed persons in the civilian labor force averaged 7.1 million in 2007 and 14.3 million in 2009. U.S. Bureau of Labor Statistics, Labor Force Statistics from the Current Population Survey, *available at* <http://www.bls.gov/web/empsit/cpseea01.htm> (accessed July 9, 2014).

with the increase in defaults, investor demand for securitized mortgages collapsed. I describe in the next Section statements made by Freddie Mac and Fannie Mae themselves about the impact of these events, especially declining house prices, on their portfolios. I then discuss in more detail the factors that led to the housing crisis, and the outcome of that crisis, in more detail in Sections B to M, below.

A. Freddie Mac and Fannie Mae Have Recognized that Declining House Prices Caused the Losses They Experienced Beginning in 2007

87. A Special Litigation Committee of the Freddie Mac Board of Directors, which was formed because of a lawsuit filed against Freddie Mac in July 2008 by its shareholders in the United States District Court for the Eastern District of Virginia, *In re Federal Home Mortgage Corp. Derivative Litigation*, No. 1:08 Civ. 773, stated in a February 25, 2011 report that: "The consensus among the current and former officers and directors of Freddie Mac interviewed by the committee was that the primary cause of the company's recent losses was an 'exogenous macroeconomic event'; namely, the unprecedented decline in the housing market. Specifically between 2006 and May 2008, house prices fell nationwide by approximately 25 percent. This is the largest, and only, nationwide decline in house prices since the Great Depression." (DX-903 at 31.)

~~88. The correlation between house prices and the potential for defaults due to a decline in such house prices has also been recognized by both Freddie Mac and Fannie Mae in their annual reports and Securities and Exchange Commission ("SEC") filings. Freddie Mac's and Fannie Mae's business consists predominately of buying whole mortgage loans and keeping or securitizing them and purchasing RMBS on the secondary mortgage market. For this reason, both Freddie Mac and Fannie Mae monitored house prices because that metric would impact their portfolios. Freddie Mac noted in DX-39 (its Annual Report for the year 2005, dated on~~

June 28, 2006) that it "monitor[s] changes in house prices across the country and the impact of these house price changes on the underlying loan-to-value ratio of mortgages in our portfolio," and that "[h]istorical experience has shown that defaults are less likely to occur on mortgages with lower estimated current losses." (DX-39 at 67.) In its Annual Report for the year 2006, dated March 23, 2007, DX-43, Freddie Mac reiterated that it "monitor[s] changes in home prices across the country and the impact of these home price changes on the underlying loan-to-value ratios," and that it "monitor[s] regional geographic markets for changes in these trends, particularly with respect to new loans originated in regional markets that have had significant home price appreciation." (DX-43 at 70.) Similarly, Fannie Mae in its Form 10-K for the 2006, filed with the SEC on August 16, 2007, noted that LTV ratios of mortgage loans may "increase[] above 80% subsequent to acquisition due to declines in home price appreciation over time, partially offset by loan principal payments." (DX-45 at 127.)

89. In its Form 10-K for the 2007 year, filed with the SEC on February 27, 2008, Fannie Mae stated that this risk had come to pass, noting that an increase in the LTVs of the mortgage loans it held was "driven by a decline in home prices across the country, particularly in states such as California and Florida, which had previously experienced rapidly rising rates of home price appreciation and are now experiencing sharp declines in home prices." (DX-49 at 128-29.)

90. Similarly, Freddie Mac noted the slowing growth in 2006, stating in its Annual Report for 2006, dated on March 23, 2007, that "[w]hile home prices rose significantly over the previous 10 years, this growth has slowed significantly in 2006 and home prices have declined in some parts of the United States." (DX-43 at 70-71.) It also noted this slowing growth in its Annual Report for the 2007, dated on February 28, 2008, stating "[w]hile home prices rose

significantly during the years prior to 2006, growth slowed significantly during 2006 and home prices generally declined in 2007 across the United States." (DX-50 at 96-97.)

91. In fact, both Freddie Mac and Fannie Mae have stated explicitly that house price declines increase the potential for losses on mortgage loans. Annual reports by Freddie Mac for the years 2006 and 2007 warned that "[a] continued reversal of this strong home price appreciation in any of the geographic markets we serve could result in an increase in delinquencies or defaults and a higher level of credit-related losses." (DX-43 at 14; *see also* DX-50 at 15.) Fannie Mae in its Form 10-K for 2006, filed with the SEC on August 16, 2007, stated that "we expect the substantial slowdown in the housing market to increase our future credit losses." DX-45 at 127. Fannie Mae had previously made this point in its Form 10-K for the fiscal year 2004, filed with the SEC on December 6, 2006, which stated that "housing price declines would reduce the fair value of our mortgage assets." (DX-42 at 49.)

92. Freddie Mac and Fannie Mae employees have also recognized that house prices are an important determinant of loan default rates. Among other testimony, Gary Kain, a Senior Vice President at Freddie Mac, stated that the "cratering" of house prices, which occurred mostly in 2008, was a "key factor" in the losses on Freddie Mac's portfolio of private-label securities. (Kain Tr. at 142:4-17.) Kevin Palmer, a Sales Associate at Freddie Mac, testified that he was aware in mid-2006 that housing price appreciation was "a very strong driver of default risk." (Palmer Tr. at 661:18-662:3.) Eric Rosenblatt, Vice President of Risk Policy, Modeling and Analytics at Fannie Mae, testified that the impact of house price changes on Fannie Mae's portfolio was "super big." (Rosenblatt Tr. at 185:20-186:8.) In his view, "if home prices had not fallen [after 2005], we wouldn't be having this discussion." (Rosenblatt Tr. at 187:19-188:16.) Finally, Lin Cao, a senior financial analyst at Fannie Mae, testified that the increase in defaults

~~"in 2006 to 2008 and even 2010" was caused by drop in home prices. (Cao Tr. at 270:16-271:10.) According to Caijiao Zhao, director of credit analytics at Fannie Mae, loss severity also "depends on home prices," so that house price appreciation is a "huge modeling input" which affects "everything in the model." (Cao Tr. at 380:24-381:25.)~~

93. It is my understanding that both Fannie Mae and Freddie Mac have asserted in this Court (and others) in response to securities fraud claims asserted by stockholders that the decline in house prices was the cause of their losses. I discuss three examples of these below.

94. Fannie Mae's September 8, 2009 memorandum of law in support of its motion to dismiss in *In re Fannie Mae 2008 Securities Litigation*, a case in the United States District Court for the Southern District of New York, stated that "[b]eginning in late 2006 and throughout 2008, the housing and credit markets suffered an extraordinary meltdown" and "[i]n 2008, home prices declined approximately 9%; credit markets froze up; and business and consumer confidence plummeted." (DX-859 at 1.) Further, Fannie Mae recognized that "in the tumultuous market of 2007 through 2008, there were a multitude of factors affecting the price of Fannie Mae's securities—most of which were global and market-wide factors not specifically relating to Fannie Mae." (DX-859 at 39.)

95. Freddie Mac, in an October 13, 2011 memorandum to dismiss the second amended complaint filed in the *Kuriakose* case referenced above, made similar statements about the causes of its losses: "[I]n 2007, this country was blindsided by the single largest decline in single-home values in recorded history" and "it is readily apparent that Freddie Mac's losses were caused by an industry-wide collapse, culminating in a government-imposed conservatorship, not any ostensible fraud." (DX-919 at 3, 5.) Freddie Mac stated that: "As Freddie Mac repeatedly warned investors, a decline in home values was likely to cause Freddie

Mac to recognize losses and to affect its capital adequacy. In November 2007, the steepest decline in home values in U.S. history led Freddie Mac to begin to recognizing losses." (DX-919 at 6.)

96. More recently, in October 9, 2013, Freddie Mac filed a memorandum of law in support of its motion to dismiss claims brought against it by stockholders in *Ohio Public Employees Retirement System* v. *Federal Home Loan Mortgage Corp.*, No. 4:08 Civ. 00160, a case in the United States District Court for the Northern District of Ohio. (DX-937.) Freddie Mac asserted that: "Just as Freddie Mac had warned investors, its financial results and its stock price suffered as a result of the collapse of the financial markets." (DX-937 at 4.) This memorandum recognized that the housing crisis that started in 2007 was "the single worst financial crisis since the Great Depression." (DX-937 at 20.) Freddie Mac's counsel in arguing this motion to dismiss in open court reiterated this point stating:

> Now, at the same time, the market also knew that if there was a substantial decline in home value, Freddie Mac was going to suffer losses inevitably. But what happened? This is what happened: The single largest decline in home prices in recorded United States history. As you saw, the analysts were aware, the street was aware, Freddie Mac was going to suffer losses if there were home declines, home price declines.

(DX-942 at 32-33.)

B. As Homes Became Less Affordable, Demand for Homes Declined

97. Turning to a more detailed description of the factors that led to the housing crisis, I first address the impact over a long period of time of rising house prices. Even with the proliferation of non-traditional mortgage products, an unavoidable consequence of the dramatic rise in house prices was that some potential buyers would be left behind. In mid-2006, the Housing Affordability Index, a measure of the relationship between house prices and median household income, reached its lowest level in at least 16 years. DX- 2760 shows the housing

affordability and first-time homebuyer affordability indices for the years 1990 through 2013, and demonstrates the drop in both indices in 2006, which reached 107.6 and 71.3, respectively. The prior trough, in 1990, coincided with the only other year-over-year decline in U.S. house prices since World War II.

98. First-time homebuyers were hardest hit. The First-Time Homebuyer Affordability Index, which measures the percentage of all U.S. households that can afford an entry-level home, fell 19 points from early 2004 through mid-2006, suggesting that the very buyers who had been the focus of governmental policy and lender efforts to increase homeownership were being driven from the market by the sharp increase in prices. This is demonstrated graphically in DX- 2760.

C. Increasing Interest Rates from Mid-2004 Through Mid-2006 Decreased Demand for Homes

99. Beginning in mid-2004, following gains in GDP growth and employment and in an effort to stave off a perceived threat of inflation, the Fed began steadily increasing the targeted federal funds rate from its historically low rate of one percent. By mid-2006, the federal funds rate had reached 5.25 percent, its highest level in more than five years. DX-2748 shows this peak in the federal funds rate with a graph showing that rate, the 10-year U.S. Treasury rate, and the 30-year fixed-rate conventional mortgage rate for the years 1971 through 2013.

100. The Fed's actions put upward pressure on mortgage rates; the rate on conventional 30-year mortgages, which had fallen as low as 5.23 percent in mid-2003 (and stayed below 6.0 percent through most of 2004 and 2005), climbed to 6.76 percent by mid-2006. DX- 2749 shows these changes in the 30-year fixed-rate conventional mortgage rate with a graph showing that rate, the 10-year U.S. Treasury rate, and the federal funds rate for the years 2003

through 2008. All else equal, higher mortgage rates increase the cost of borrowing, making homes less affordable.[40]

101. Indeed, over the period 1990 to 2005, house prices in the United States were negatively correlated (–0.725) with mortgage rates—as mortgage rates decreased, house prices increased.[41] This inverse relationship between interest rates and house prices is shown by DX-2761 which details the 30-year fixed-rate conventional mortgage rate and the monthly percentage change in the S&P/Case-Shiller 10-City Composite Home Price Index for the years 1990 through 2005.

D. Excess Supply of New Homes Put Downward Pressure on Prices

102. Not surprisingly, as demand for homes increased in the late 1990s and early 2000s, the home-building industry responded by accelerating new-home construction. Annualized housing starts in the U.S., having hovered in the range of approximately 1.0 to 1.4 million starts from 1999 to 2002, accelerated in 2003, reaching a peak of more than 1.8 million

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[40] For example, a 1.5 percent increase in the rate on a $250,000 30-year fixed rate mortgage loan would increases the monthly payment by approximately $240. Because lenders typically establish a minimum ratio limiting a borrower's monthly mortgage payment to a set percentage of monthly income, the monthly income required to make that increased mortgage payment increases by more than the mortgage payment. If the lender's minimum ratio is 28 percent (called the front-end ratio), then the monthly income required increases by more than $850, or more than $10,000 annually, assuming the ratio is 2. *See* Jack P. Friedman, *et al.*, *Dictionary of Real Estate Terms*, 7th ed. (Hauppauge, NY: Barron's Educational Series, Inc., 2008), pp. 205, 392.)

[41] *See*, *e.g.*, Marco Terrones and Christopher Otrok, "The Global House Price Boom," in World Economic Outlook: The Global Demographic Transition (Washington, D.C.: International Monetary Fund, September 2004), p. 78. During the period 2004 through 2006, mortgage rates increased as home prices continued to rise. This period was an anomaly, caused by the changed mix of instruments being offered and expanded underwriting guidelines. These continued to drive demand for a period of time due to increased availability of the products to those previously left out of the market. Eventually, these new entrants were priced out of the market, even with the new instruments and loosened underwriting standards.

starts in January 2006. DX- 2762 shows the annualized single-family housing starts from January 1999 through December 2013, with the peak in January 2006.

103. By the end of the boom, however, new-home construction had outpaced demand. DX- 2763 shows the U.S. homeowner vacancy rate from the first quarter of 1956 through the fourth quarter of 2013. From the third quarter of 2004 to the first quarter of 2007, the national vacancy rate for single-family homes—the percentage of homes for sale that are unoccupied—grew from 1.7 percent to 2.8 percent, suggesting a sudden and significant mismatch between supply and demand. Prior to the crisis, the rate had never been above 2.0 percent. Rising vacancy rates typically lead to downward pressure on house prices, as sellers with vacant homes are motivated to cut prices to accelerate a sale to minimize ongoing mortgage and other costs.

104. The increase in the vacancy rate was particularly acute in the key new-home markets of Florida, Nevada, and Arizona, in which vacancies peaked at 5.1, 5.3, and 3.8 percent, respectively in 2007 and 2008, all well above the national rate and well above the historical averages for those states. DX- 2764 shows the homeowner vacancy rates for the U.S. as a whole against the vacancy rates in Arizona, Florida, Nevada and California. Note that in each of these markets, as well as in the U.S. as a whole, vacancy rates were clearly headed upward by the first quarter of 2006 (if not earlier), well ahead of the decline in prices that occurred in 2007. DX-2765 shows the homeowner vacancy rates for the U.S. against the vacancy rates in Arizona, Florida, Nevada and California but focuses on the years 2005 through 2013.

105. The mismatch of supply and demand was also apparent in the existing-home market. The volume of existing-home sales peaked in mid-2005, then fell steadily through much of 2006 and 2007, again suggesting a softening in demand well before the price declines observed later. DX-2766 shows the existing home sales in millions of dollars in the U.S. for

January 1999 through December 2013. As sales fell, existing-home inventory began to climb. The number of existing homes for sale, which had hovered in the range of 2 to 2.5 million homes in the early 2000s, climbed to more than 3.5 million homes in May 2006 and to more than 4.0 million in July 2007. DX-2767 shows the existing-home inventory in millions of dollars and in the "months' supply" of homes, which is an estimate of the size of the existing-home inventory relative to the concurrent pace of sales. Months' supply climbed from a low of 3.6 months in January 2005 to more than 7 months in mid-2006, and to more than 10 months by September 2007.

E. Residential Real Estate Investors Exited the Market, Further Decreasing Demand

106. Investors in non-owner-occupied housing found the market increasingly attractive while house prices climbed in the early 2000s. Beginning in 2006, however, that trend reversed. The percentage of new mortgage loans used to purchase non-owner-occupied homes fell from more than 16 percent in 2005 to less than 11 percent in 2009. DX-2757 shows the percentage of loans for purchase of non-owner-occupied homes and the S&P/Case-Shiller 10-City Composite Home Price Index for the years 1997 through 2010. As house prices flattened and then declined, purchases of non-owner-occupied homes declined as well. Such declines were fastest in active investor markets such as Arizona, California, Florida, and Nevada.[42]

107. The exit of investors hastened the growing mismatch between supply and demand and contributed to the downward pressure on prices. This was caused by reduced expectations regarding future occupancy as well as house price appreciation and reduced availability and

[42] Eric S. Belsky and Nela Richardson, "Understanding the Boom and Bust in Nonprime Mortgage Lending," Joint Center for Housing Studies of Harvard University (September 2010), p. 81.

stricter terms for mortgage credit. These effects can be observed not only in geographic markets like those above, but also in certain price segments within such markets. In Los Angeles, Miami, Phoenix, and Las Vegas, for example, the sharpest price increases, as well as the sharpest subsequent price declines, occurred in the bottom third of the market. DX-2768, 2769, 2770 and 2771 show the home price indices for Los Angeles, Miami, Phoenix and Las Vegas, respectively for the low tier (under $439,912), middle tier ($439,912-$713,676), high tier (over $713,676) and aggregate (overall market) homes from January 1993 through December 2013. Investors and developers had been most active in these bottom segments of the markets.

F. Lenders Tightened Underwriting Standards, Which Decreased the Availability of Credit—and Thus Demand for Homes

108. Referring again to the OCC's annual survey of credit underwriting practices, bank examiners reported that banks had begun tightening credit standards beginning in 2007. DX-2741 shows the changes in underwriting standards for residential real estate loans in terms of whether the standards had tightened, remained unchanged, or eased year-to-year based on the OCC's survey results. By 2008, more than half of respondents reported tightening standards in most loan categories. In high-LTV home equity loan portfolios, nearly all respondents reported tightening standards in 2008, as shown in DX-2743.

109. Borrowers thus faced reduced availability of credit, due to generally higher rates and increasingly strict lending terms. Such factors directly or indirectly affected the cost of homeownership, not only for potential buyers but for some existing owners as well (such as those facing interest-rate resets on adjustable-rate mortgages), further reducing demand for houses.

G. Falling House Prices Increased Defaults

110. As I explained above, Freddie Mac and Fannie Mae have acknowledged the fact that declining house prices lead to increased borrower delinquencies and defaults on homes, ultimately causing losses for mortgage-related investments. This relationship is confirmed by economic theory, as I show in this Section.

111. When the outstanding principal balance of a mortgage exceeds the current market value of the home, the owner is left with negative equity. With the sharp decline in house prices that began in 2007, coupled with the relatively recent vintage of so many owners' mortgages and the substantial volume of high-LTV and home equity loans, the housing and mortgage markets experienced a dramatic increase in the number of owners with negative equity. By the end of 2009, approximately 24 percent of all mortgaged residential properties in the U.S. had negative equity, including 48 percent in Florida, 70 percent in Nevada, 51 percent in Arizona, and 35 percent in California.[43] Indeed, by the fourth quarter of 2007, for the first time in at least 62 years, U.S. homeowners in aggregate owed more on their homes than they enjoyed in equity.[44] DX-2772 shows U.S. homeowners' equity as a percentage of household real estate assets for the years 1990 through 2013.

112. Default may become an increasingly attractive option to homeowners who find themselves with negative equity in their homes. When the cost of default is low, such as when loan provisions or state law provide the lender no recourse to the borrower's other assets, the

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[43] First American CoreLogic, "Underwater Mortgages On the Rise According to First American CoreLogic Q4 2009 Negative Equity Data," February 23, 2010.

[44] Though not shown in the exhibit, available data for this series begin in quarter four of 1945. *See* Board of Governors of the Federal Reserve System, Flow of Funds Accounts of the United States, Households; owners' equity in real estate as a percentage of household real estate (FL155035066), *available at* http://www.federalreserve.gov.

appeal may grow further. Default may also increase when the value of default is high, such as when mitigation efforts or foreclosure moratoria delay the foreclosure process. The longer the expected duration of the foreclosure process (because the borrower's residency may continue without further payment), the higher the expected value of default. One study found, based on analysis of loans originated from 2005 to 2007, that a three-month delay in expected foreclosure duration increased the risk of default by approximately 33 percent, which the authors found "is equivalent to the same marginal effect of increasing the LTV ratio by 11.06 percent or a decrease in the FICO score by 32.83 points."[45]

113. In short, a mortgage carries an embedded put option—the owner may choose to retain the home, preserving her credit rating and accepting the risk that the house will not increase in value before she must sell, or she may transfer that risk to the lender by defaulting on her loan and abandoning the home.

114. Indeed, as prices fell, delinquencies soared. From mid-2005 to late 2009, serious delinquencies (delinquencies of 90 days or more, plus foreclosure inventory) on subprime mortgages increased more than five times, from 5.7 percent to almost 30.6 percent, and even on prime mortgages delinquencies increased approximately ten times, from 0.7 percent to 7.0 percent. DX-2773 shows the seriously delinquent rates in the U.S. for all mortgages (including prime and subprime), prime mortgages and subprime mortgages, and the S&P/Case-Shiller 10-City Composite Home Price Index.

115. In the rising home-price environment of 2000 to early 2006, increased values had given borrowers a growing equity cushion against which they could borrow. In fact, by 2006,

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[45] *See*, *e.g.*, Shuang Zhu and R. Kelley Pace, "The Influence of Foreclosure Delays on Borrower's Default and Behavior," April 19, 2011, p. 12 *available at* http://ssrn.com/abstract=1717127 (accessed July 9, 2014).

home equity loans had grown to approximately 14 percent of all new residential mortgage originations. DX- 2745 demonstrates this percentage through a graphical representation of the share of residential mortgage loan originations by loan type, which charts (i) conventional/conforming, (ii) FHA/VA, (iii) Jumbo, (iv) Alt-A, (v) subprime and (vi) home equity loan types as a percentage of the residential mortgage originations for the years 1990 through 2012. As prices declined, however, that equity cushion disappeared, and many borrowers who previously had some equity cushion found themselves with negative equity, further contributing to defaults. DX- 2773 shows the seriously delinquent rates in U.S. for all mortgages (including prime and subprime), prime mortgages and subprime mortgages, and the S&P/Case-Shiller 10-City Composite Home Price Index, which demonstrates the inverse relationship between delinquency rates and house prices.

H. Borrowers With Adjustable-Rate or Interest-Only Mortgages Were Especially Hard-Hit by Falling House Prices and the Reduced Availability of Credit

116. Declining house prices were especially problematic for borrowers who had taken advantage of lenders' offerings of hybrid/ARM or interest-only mortgages.

117. In hybrid/ARM mortgages, a low initial interest rate is offered for a period of two or three years before the interest rate is reset to an adjustable rate tied to one of several benchmarks. About 75 percent of subprime mortgages and 10 percent of Alt-A mortgages originated between 2003 and 2007 were short-term hybrids.[46]

118. Many borrowers with hybrid/ARM loans expected to refinance their mortgages before the expiration of the introductory term, as the increase in interest rates (and therefore monthly payments) could be substantial. That strategy, which depended upon the continued

[46] *See* Christopher Mayer, *et al.*, "The Rise in Mortgage Defaults," *Journal of Economic Perspectives*, vol. 23, no.1 (Winter 2009), p. 30.

increase in the value of the home, was frustrated when house prices fell—and at the same time, new mortgages became more difficult to obtain due to tightening underwriting guidelines, so refinancing was not a viable option.

119. Interest only mortgages are those on which a borrower only repays interest, not principal, during a period of time—which also has the effect of offering a low initial payment—after which the borrower must begin to repay principal, often by making a large "balloon" payment at the end of the loan term.[47]

120. Borrowers with interest-only loans had no possibility of building equity in their homes. Thus, when house prices fell, they often had little or no equity cushion to fall back on—meaning that the loan became "underwater" more quickly.

I. An Increase in Foreclosures Beginning in 2007 Further Drove Down House Prices, Creating a Vicious Cycle

121. As the crisis progressed, lenders were forced to begin liquidating their growing inventories of abandoned or foreclosed properties and to agree to an increasing number of short sales. Sales of such properties, which combined accounted for less than two percent of home sales in the U.S. in 2006, grew to a combined total of more than 38 percent of all homes sales by the first quarter of 2009. DX-2774 shows the percentage of all home sales represented by real estate owned homes ("REO") and pre-foreclosure (short) sales for the years 2006 through 2013. The number of foreclosure sales grew from a combined total of fewer than 60,000 in 2006, to more than 800,000 in 2008, and to more than 1 million each year from 2009 through 2011. DX-2775 shows the volume of sales of REO homes and short sales from 2006 through 2013.

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[47] Demyanyk, Yuliya, and Otto Van Hemert, "Understanding the Subprime Mortgage Crisis," *The Review of Financial Studies*, May 4, 2011.

122. The increase in foreclosures exerted further downward pressure on house prices. A July 2008 study by John P. Harding, Eric Rosenblatt and Vincent Yao in the *Journal of Urban Economics* concluded that having a neighboring property in the process of foreclosure can result in a discount to market value of up to one percent per nearby distressed property. Donald Bisenius, a senior vice president and later an executive vice president at Freddie Mac during the period 1997 to 2011, agreed that such contagion can have an effect not only on property values but also on the performance of mortgage loan portfolios:

> What I didn't fully appreciate, as I say here, is the fact that the loans in that portfolio are on houses that sit next to houses with loans in other people's portfolios. And what happens to the loans on those houses in the same neighborhood on other people's portfolio can impact the performance of the loan that I held in—or Freddie Mac held in its portfolio. . . .

(Bisenius Tr. at 606:4-11.)

J. Empirical Studies Confirm That The Decline in House Prices Beginning in May 2007 Was the Primary Driver of Increased Borrower Delinquencies and Defaults

123. A number of empirical studies have concluded that the primary driver of loan delinquencies and defaults beginning in April 2007 was the unanticipated steep decline in house prices.

124. Christopher Mayer of Columbia University, for example, and his co-authors, Karen Pence and Shane M. Sherlund of the Fed, found "substantial evidence that declines in house prices are a key factor in the current [2009] problems facing the mortgage market."[48] A February 2009 study by the Federal Reserve Bank of Atlanta came to a similar conclusion, finding that it was primarily the unexpected magnitude and suddenness of the drop in house

[48] Christopher Mayer, *et al.*, "The Rise in Mortgage Defaults," *Journal of Economic Perspectives*, vol. 23, no. 1 (Winter 2009), p. 29.

prices that led to foreclosures.[49] A September 2009 study by the Federal Reserve Bank of Atlanta confirmed the finding of the previous paper.[50]

K. The Impact of the Decline in the Housing Market, House Prices and the Economy Was Most Severe for Mortgage-Related Investments Made During the Period 2006 to 2007

125. Mortgages issued during the 2006 to 2007 time period never had a chance to benefit from any house price appreciation. Therefore, there may have been only a small, if any, equity cushion for these mortgages when house prices began to fall dramatically. The reduced availability of credit was particularly harmful for borrowers with interest-only loans or loans with teaser rates. As noted above in paragraph 118, many such borrowers expected to refinance their mortgages once the low initial rate or interest-only period expired. Higher-than-expected interest rates and stricter loan terms in many cases made refinancing far more expensive than expected, if not altogether impossible, leading to an increase in the incidence of default.

L. With the Increased Occurrence of Default and Foreclosure, the Market for Non-Agency Securitized Mortgages Collapsed

126. When house prices fell and mortgage loan performance faltered, the market for RMBS began to realize the risks that previously had been considered remote. As this impact was felt across the market, originators of subprime loans, including originators of loans in the At-Issue Certificates became overwhelmed by high default rates and delinquencies and declared bankruptcy or shutdown. For example, Silver State Mortgage announced that it had ceased

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[49] Kristopher Gerardi, *et al.*, "Making Sense of the Subprime Crisis," Federal Reserve Bank of Atlanta Working Paper 2009-2 (February 2009), p. 1.

[50] Kristopher Gerardi, *et al.*, "Decomposing the Foreclosure Crisis: House Price Depreciation versus Bad Underwriting," Federal Reserve Bank of Atlanta Working Paper 2009-25 (September 2009), p. 1.

operations and was exiting the market on February 14, 2007, and People's Loan Choice Home Loan filed for Chapter 11 bankruptcy on March 20, 2007.[51]

127. In April 2007, New Century Financial Corp., one of the most prominent and successful subprime mortgage loan originators, filed for bankruptcy, cut its workforce by 54 percent, and sold all of its servicing assets.[52]

128. Rating agencies, such as Moody's, Fitch and Standard and Poor's ("S&P") regularly evaluated RMBS, assigning ratings to RMBS that reflected the rating agencies' expectations of the performance of the securities. A few months after the New Century announcement, Standard & Poor's downgraded nearly 16 percent of its outstanding RMBS ratings, and in 2009 downgraded more than 70 percent of those RMBS ratings.[53]

129. In June 2007, Bear Stearns froze redemptions from two of its hedge funds, both of which were heavily invested in subprime mortgage-backed securities. At t that time, the spread (a measure of the risk premium demanded by investors to hold the security) on the ABX 06-2 index, a synthetic, tradable index of subprime mortgage-backed securities, had increased to a new high, suggesting that demand for subprime RMBS was beginning to plummet.[54] DX-2776 shows the non-agency securitization of residential mortgages by calendar quarter from the first quarter of 2003 until the fourth quarter of 2012. The total volume of new non-agency RMBS fell

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51 "Silver State Mortgage Makes Abrupt Exit," HousingWire, February 15, 2007; "People's Choice Home Loan Files for Bankruptcy," Bloomberg, March 20, 2007.

52 "New Century Files for Chapter 11 Bankruptcy," CNN Money, April 3, 2007.

53 Erkan Erturk, *et al.*, "Default Study: Global Structured Finance Default Study — 1978–2009: Downgrades Accelerate In 2009 Due To Criteria Changes And Credit Performance," Standard & Poor's, March 22, 2010, Table 3, p. 15.

54 Transcript of the Meeting of the Federal Open Market Committee on June 27-28, 2007, p.6.

from $259 billion in the second quarter of 2007 to $124 billion in the third quarter and to just $53 billion in the fourth quarter. Capital drives the mortgage-lending industry and without it, originations fall.

130. Given the uncertainty in the valuation of RMBS, particularly subprime RMBS, trading in the market for these securities declined dramatically after August 9, 2007. U.S. financial markets froze and the Fed noted that money markets were plagued by liquidity problems and short-term funding pressures.[55] Investors, including hedge funds, pulled out of the markets altogether. Stock prices of investment banks and other financial companies plummeted. By March of 2008, a run on Bear Stearns led to a government-organized rescue with JP Morgan purchasing the entity.

131. This culminated in the collapse of Lehman Brothers on September 15, 2008, when Lehman Brothers, the fourth largest investment bank in the U.S. and a global financial services firm, filed for bankruptcy. It was the largest bankruptcy filing in U.S. history—surpassing both WorldCom and Enron.[56] In one month, October of 2008, nearly $10 trillion in market capitalization from the global equity markets was gone—the largest monthly decline in history.[57]

132. Former Federal Reserve Bank Chairman Alan Greenspan provided the following commentary on the crisis, comparing it to a "hundred year flood":

> At issue is whether the current crisis is that 'hundred year flood.' At best, once in a century observations can yield results that are scarcely robust. But recent evidence suggests that what happened

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55 Board of Governors of the Federal Reserve System, Monetary Policy Report to the Congress, February 27, 2008, p. 24.

56 "Lehman Brothers Files for Bankruptcy, Scrambles to Sell Key Business," CNBC, Sept. 15, 2008.

57 "Case Study: The Collapse of Lehman Brothers," Investopedia.

> in the wake of the Lehman collapse is likely the most severe global financial crisis ever.
>
> The evaporation of the global supply of short term credits within hours or days of the Lehman failure is, I believe, without historical precedent. A run on money market mutual funds, heretofore perceived to be close to riskless, was underway within hours of the Lehman announcement of default. The Federal Reserve had to move quickly to support the failing commercial paper market. Unsupported, trade credit withdrawal set off a spiral of global economic collapse within days. Even the almost sacrosanct fully collateralized repurchase agreement market encountered severe unprecedented difficulties.[58]

133. Warren Buffett offered this description of the contagion that brought down the U.S. economy in a letter to his shareholders:

> By the fourth quarter [of 2008], the credit crisis, coupled with tumbling home and stock prices, had produced a paralyzing fear that engulfed the country. A freefall in business activity ensued, accelerating at a pace that I have never before witnessed. The U.S.—and much of the world—became trapped in a vicious negative-feedback cycle. Fear led to business contraction, and that in turn led to even greater fear.[59]

M. The Unprecedented Depth and Duration of the Housing Market Decline and Its Effect on the Broader Economy Were Unexpected

134. Although some market participants debated whether the upward trajectory of house prices in 2003 through 2005 was sustainable, few regarded a broad housing market decline as a likely event. Home buyers also maintained optimistic expectations about the future growth of house prices during the 2006 and 2007 period.

135. Indeed, prior to 2006, after economic contractions, markets had cleared through temporary reductions in housing starts or sales volume and without significant or lasting

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[58] "Greenspan: Economy in 'once-in-a-century' crisis," CNN Money.com, September 14, 2008, <http://money.cnn.com/2008/09/14/news/economy/greenspan/> (accessed July 9, 2014).

[59] Berkshire Hathaway, Inc., 2008 Annual Report, p. 3.

reductions in price. The few, rare nationwide downturns after the Second World War were brief, as shown by DX-2731, which shows the composite house price index for the U.S. from 1945 through 2013.

136. By the mid-2000s, prominent economists Karl Case, Robert Shiller, and Dean Baker of the Center for Economic and Policy Research, and Paul Krugman were suggesting the possibility of a "bubble" forming in the housing market. These observations increased in frequency over time, but no consensus was reached about the expected duration of the boom or the severity of the bust. In retrospect, the risks were not adequately measured—risk calculations were based on historical data that was limited and not predictive at all of the severity of the decline in house prices that actually occurred.

137. Even during the first half of 2007, the majority of economists, bankers and regulators expressed the belief that the problems in the subprime sector were unlikely to spread to the broader credit markets or to the economy as a whole. For example, Federal Reserve Chairman Ben Bernanke in February 2007 stated that the housing downturn was not "a broad financial concern or a major factor in assessing the state of the economy."[60] In May 2007, Chairman Bernanke reiterated this view, stating that "the effects of the troubles in the subprime sector on the broader housing market will likely be limited, and we do not expect significant spillover."[61] Treasury Secretary Henry Paulson stated in April 2007 that he didn't "see [subprime mortgage market troubles] imposing a serious problem" and said he thought it was

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[60] John Cassidy, "Anatomy of a Meltdown; A Reporter at Large," New Yorker, December 1, 2008.

[61] Ben S. Bernanke, "The Subprime Mortgage Market," Speech at the Federal Reserve Bank of Chicago's 43rd Annual Conference on Bank Structure and Competition, May 17, 2007, <http://www.federalreserve.gov/ newsevents/speech/bernanke20070517a.htm>.

"going to be largely contained."[62] Secretary Paulson even reiterated this view in July 2007, after Bear Stearns had frozen two of its hedge funds.[63]

138. In summary, a number of mutually reinforcing factors caused house prices to decline and the housing market to deteriorate at a rapid and unprecedented pace beginning in 2007 and continuing through 2009. These factors caused significant losses to participants in the mortgage market—including Freddie Mac and Fannie Mae, which are two of the most sophisticated entities in the industry.

VI. The Deterioration in the Performance of Loans in the Supporting Loan Groups Corresponded to Falling House Prices and Increased Unemployment.

139. I have analyzed the performance of loans in the Supporting Loan Groups for the At-Issue Certificates, in particular, the increase in default rates of those loans, and found that the increase in default rates correlates directly with the decline in house prices. DX-2793 shows this correlation by looking at default rates and house prices from November 2005 through December 2013. After house prices leveled off and started to decline in early 2007, the cumulative default rate for loans in the Supporting Loan Groups for the At-Issue Certificates started to increase. The default rates continued to rise throughout this period, until leveling off in July 2009 as house prices began to stabilize.

140. I have also compared the cumulative default rate for loans in the Supporting Loan Groups for the At-Issue Certificates to the graph of house prices that Freddie Mac submitted to the United States District Court for the Southern District for New York in the *Kuriakose* case, which I discussed above in paragraph 82. This comparison appears in DX-2792, which is

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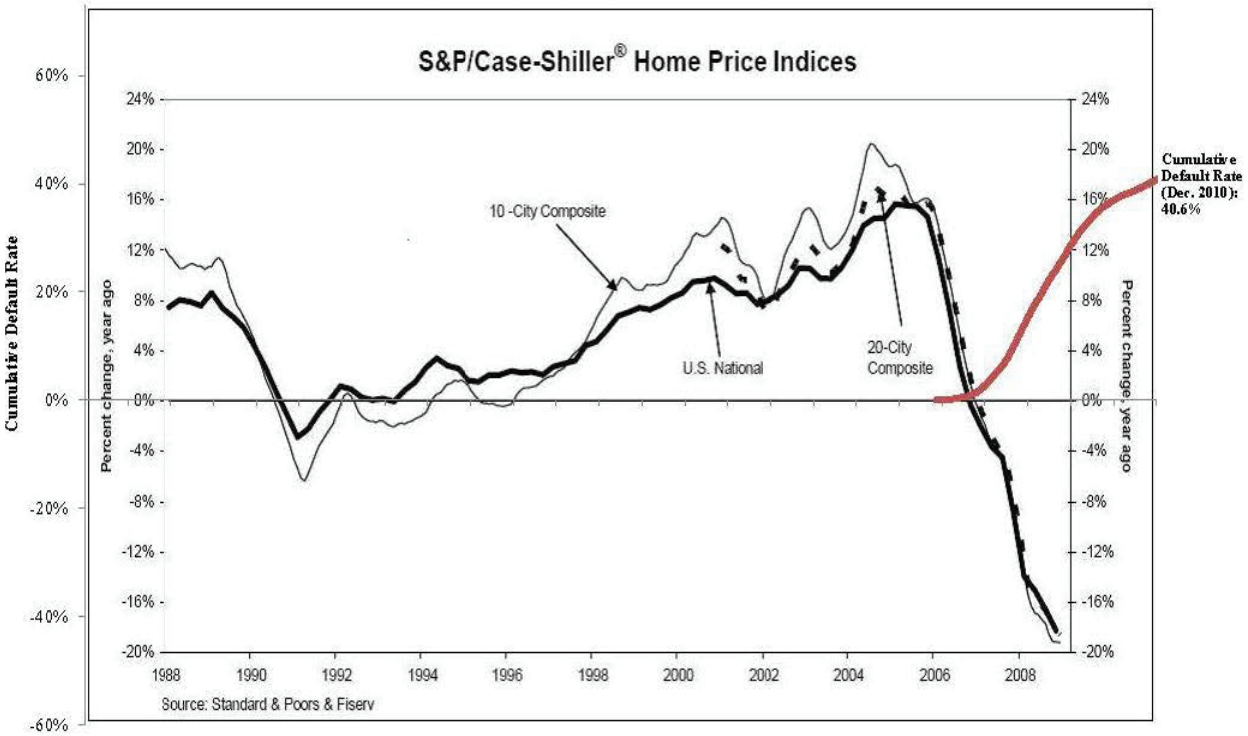
62 "Treasury's Paulson—subprime woes likely contained," Reuters, April 20, 2007.

63 "US's Paulson: Subprime 'At or Near the Bottom;' Need Vigilance," Market News International, July 23, 2007.

reproduced below. The graph confirms that as house prices leveled off and started to decline in early 2007, the cumulative default rate for loans in the Supporting Loan Groups for the At-Issue Certificates began to increase.

Cumulative Default Rate of At-Issue Loans and DX 919



141. The relationship between house prices and default can also be seen by looking at the default rates for loans in the Supporting Loan Groups for each of the At-Issue Certificates. DX-2794 shows this correlation by looking at each Supporting Loan Group for the At-Issue Certificates from the period November 2005 through December 2013. Again, the default rates started to increase in July 2007 when house prices were already in decline. The default rates continued to increase as house prices continued to decline, before leveling off in November 2010 as house prices began to stabilize. DX-2795 shows this relationship by focusing on the time period January 2004 through November 2008.

142. This relationship also can be shown on a state-by-state basis by examining the relationship between default rates of loans in the Supporting Loan Groups for the At-Issue Certificates and the percent change of house prices from the date of origination of the loans through the exit date of the loan (exit dates are the dates on which the loan is considered to be in default). Again, there is a direct and strong correlation between default rates of loans and the change of house prices in the relevant state. DX-2796 shows that loans in the Supporting Loan Groups secured by houses in states with the largest house price declines—Nevada, Arizona, Florida and California—had higher default rates. A trend line shows default rates increasing as declines in house prices become large in magnitude.

143. There is also a direct and strong correlation between the default rates of the loans in the Supporting Loan Groups for the At-Issue Certificates and the increase in unemployment rates in individual states. DX-2797 shows that default rates for loans were the highest in states where unemployment increased the most. A trend line shows that default rates increased as unemployment increased.

144. In summary, there is a direct and strong correlation between the default rates of the loans in the Supporting Loan Groups for the At-Issue Certificates and house prices, as well as unemployment. This is further confirmed by the fact that in the states where house prices declined the most—and unemployment increased the most—the loans in the Supporting Loan Groups had the highest rates of default.

VII. In My Opinion, the Loans Found to Be "Defective" By Mr. Hunter Performed Similarly to "Non-Defective" Loans—Indicating Either That the "Defects" Do Not Exist or That They Did Not Cause Loan Defaults or Losses

145. As I understand the issues in this matter, plaintiff asserts (based on the opinions of Robert W. Hunter and John A. Kilpatrick, as extrapolated by Charles Cowan) that (i) 68.6 percent of loans in the Supporting Loan Groups for the seven At-Issue Certificates "had

substantially increased credit risk as a result of the underwriting defects," *i.e.*, were "materially defective," (ii) the loan-to-value ratios disclosed in the Prospectus Supplements were too low because of some of the properties had inflated appraisals, and (iii) the Prospectus Supplements contained misrepresentations concerning owner occupancy statistics for the At-Issue Loans.[64]

146. My analysis did not address directly whether or not these allegations were true. Rather, I analyzed whether, if those allegations were true, they caused the performance of loans in the Supporting Loan Groups for the seven At-Issue Certificates purchased by Freddie Mac and Fannie Mae to be worse than would otherwise have been the case, and, ultimately, whether those alleged defects caused losses to Freddie Mac and Fannie Mae as holders of the seven At-Issue Certificates. I performed three benchmarking studies that were excluded by the Court, and I do not discuss them here.[65]

147. I also performed an analysis based on the 721[66] loans that were re-underwritten by Mr. Hunter from the Supporting Loan Groups for the seven At-Issue Certificates to determine whether defects alleged by plaintiff had any impact on rates of loan default. If the underwriting defects found by Mr. Hunter affected loan performance, then one would expect to find, all else being equal, that the loans he found to be defective ("Hunter Defective Loans") performed worse than loans he did not find to be in violation of applicable underwriting guidelines ("Hunter Non-Defective Loans").

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[64] Nov. 10, 2014 Hunter Report, p. 3; Oct. 6, 2014 Hunter Report, p. 4; Oct. 7, 2014 Cowan Report, pp. 7-8.

[65] *See* n.36, *supra*.

[66] Two of the loans reunderwritten by Dr. Hunter were excluded due to missing or inconsistent data in LoanPerformance.

148. To compare the performance of Hunter Defective Loans and Hunter Non-Defective Loans, I developed a regression model, supplemented with data obtained from LoanPerformance. Regression analysis identifies the relationship between independent (or explanatory) variables—here, relevant disclosed loan and borrower characteristics and changes in economic conditions[67]—and one or more dependent variables—here the event of loan default (or prepayment).

149. My model identifies this relationship as of December 2013. DX-2777 shows the results of my model, which are discussed below.

150. As set forth in paragraph 32 above, a variety of observable loan and borrower characteristics, along with macroeconomic conditions such as house prices and unemployment, are known to affect the riskiness of mortgage loans. My model accounts for these as explanatory variables, for example, including CLTV, FICO Score, documentation, property type, property purpose, balloon payment, changes in equity and changes in unemployment.

151. I measure the effect of Mr. Hunter's alleged underwriting defects on the probability of serious delinquency or default by including as an explanatory variable a Hunter Defective Loan indicator, as well as a Security Indicator and a Security/Hunter Defective Loan interaction term for each of the At-Issue Certificates. In order to evaluate whether Hunter Defective Loans are more likely to default or become seriously delinquent than Hunter Non-Defective Loans, I test whether the sum of the estimated coefficients on the Hunter Defective Loan indicator and the Security/Hunter Defective Loan interaction term in the default equation is statistically significantly different from zero for each of the Supporting Loan Groups for the At-

[67] With respect to economic conditions, I measure equity and the change in unemployment as of December 2013 if the loan is still current as of December 2013, and as of the date of default or prepayment otherwise.

Issue Certificates. If I cannot reject the null hypothesis that the sum of these coefficients is equal to zero at the five percent significance level), then I conclude that the probability of default or serious delinquency is not statistically significantly different for the allegedly defective loans than for the non-defective loans underlying a given At-Issue Certificate, controlling for loan and borrower characteristics and changes in economic conditions.

152. This combination of indicators and interaction terms is a reliable and appropriate approach to take because it is a clean and direct test of what the regression is meant to measure—whether the Hunter Defective Loans performed worse than the Hunter Non-Defective Loans for the pools of loans supporting each At-Issue Certificate. Only if the performance was different for the pool underlying a particular At-Issue Certificate could there be losses caused by the alleged defects. The indicator variables for the pools supporting each Security are included because the loans underlying a particular Certificate may have unobservable characteristics—such as neighborhood concentration or origination during the same time period within a year—that could affect their performance. Interactions between the Security indicator and the Hunter Defective Loan Indicator are added as explanatory variables to determine the extent (if any) to which the Hunter Defective Loan indicator had an impact on serious delinquency and default in each of the pools supporting the At-Issue Certificates, with the results shown in DX-2777.

153. After controlling for observable loan and borrower characteristics, changes in economic factors, and the security level effect, I conclude that the probability of default or serious delinquency was not statistically significantly different at the five percent significance level for Hunter Defective Loans versus Hunter Non-Defective Loans for the Supporting Loan Groups of any of the At-Issue Certificates. DX-2777 presents the results of this analysis. For each of the At-Issue Certificates, the results show that the sum of the coefficients on the Hunter

Defective Loan indicator and the interaction between the Hunter Defective Loan indicator and the indicator for the particular At-Issue Certificate is not statistically significantly different from zero at the five percent significance level.[68] If I cannot reject the null hypothesis that the sum of the coefficients is equal to zero, I conclude that the probability of default or serious delinquency is not statistically significantly different for the Hunter Defective Loans versus the Hunter Non-Defective Loans in that Certificate.[69]

154. In my opinion, based on this analysis, either Mr. Hunter's re-underwriting results are not reliable or his alleged underwriting defects did not affect the performance of the loans in the Supporting Loan Groups. It is also my opinion, based on this analysis, that the alleged losses on the At-Issue Certificates are explained by factors other than any alleged misstatements in the Offering Documents—because the effect of the Hunter Defective Loan indicator for each of the seven Supporting Loan Groups is not statistically significantly different from zero.

155. My analysis is reinforced by the analyses of plaintiff's expert, Dr. G. William Schwert, which are described in detail in the following section.

VIII. The Analyses by Plaintiff's Expert, Dr. Schwert, Supports My Opinion That Any Losses Experienced by the Seven Certificates At Issue Here Were Caused by Factors Other Than Alleged Misstatements

156. Plaintiff's expert, Dr. G. William Schwert, also performed an analysis similar to mine. To be clear, my analyses (including those that were excluded) are rigorous and reliable, and in my opinion better suited to address these issues than the analyses performed by Dr.

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[68] DX-2777.

[69] As a check, I also estimate a separate regression for each Supporting Loan Group for each At-Issue Certificate. The results from these regressions corroborate my overall findings, showing that the probability of default or serious delinquency is not statistically significantly different for Hunter Defective Loans.

Schwert. The results of my analyses should be credited over those of Dr. Schwert, which suffer from errors that I describe below.

157. Nevertheless, Dr. Schwert's analyses (like mine), show that—assuming plaintiff's allegations concerning misrepresentations in the Offering Documents are true—the alleged misrepresentations generally did not cause the performance of the loans supporting the seven At-Issue Certificates purchased by Freddie Mac and Fannie Mae to be worse than would otherwise have been the case.

A. Dr. Schwert's "Multinomial Cross-Sectional Logit Model" Shows That Alleged "Defects" Had No Impact on the Likelihood that a Loan Would Default

158. Dr. Schwert's model purports to respond to mine by estimating how the independent variables included in the model (observable loan and borrower characteristics and economic factors) affect (i) the likelihood of default, and (ii) the likelihood of prepayment, as of December 2013. DX- 2619 shows the results of Dr. Schwert's model, and is discussed below. I refer to DX-2619 as Dr. Schwert's original results, because, as I discuss below, Dr. Schwert recently revised his results. I will address those revised results after addressing his original results.

159. As I did, Dr. Schwert used loans found "defective" by Mr. Hunter and loans Mr. Hunter did not find "defective." In order to capture the potential impact of a "defect" on the performance of a loan, Dr. Schwert also identified "defective" loans with a "Hunter Defective Loan Indicator" and used that indicator as one of the explanatory variables in his model. The model thus seeks to determine whether that variable (and many others) had a statistically significant impact on the likelihood that a loan would default versus stay current as of December 2013.

160. In both his original and revised analyses, however, Dr. Schwert failed to properly use Security Indicators and interaction terms in addition to the Hunter Defective Loan Indicator. This dramatically changed the specification of his model—making it fundamentally different from my model—and constrained his model in such a way that it is impossible to determine whether "defective" loans had a differential impact on loan performance across the pools supporting the At-Issue Certificates. By using a single indicator variable, his model does not account for security-specific impacts that I account for using Security Indicators and interaction terms. As a result, his specification suffers from an omitted variables bias which may lead to estimating a biased coefficient for the Hunter Defective Loan Indicator.

161. With respect to the "Hunter Defective Loan Indicator," Dr. Schwert's original results show that it did not have any statistically significant impact on default.

162. I understand that on February 13, 2015, Dr. Schwert revised DX-2778 based on reunderwriting results provided by Mr. Hunter in October 2014. I understand that in his October 2014 report, Mr. Hunter determined that some loans he had previously identified as materially defective were no longer materially defective. In the following paragraphs provide a discussion of the results of Dr. Schwert's revised analysis.

163. Dr. Schwert's revised version of his multinomial cross-sectional logit model again finds that the coefficient for "Hunter Defective Loan Indicator" remains statistically insignificant at the five percent significance level. This finding further supports my opinion that the alleged underwriting defects in the sample of loans reviewed by Mr. Hunter had no statistically significant impact on the likelihood of serious delinquency or default for those loans.[70]

[70] Dr. Schwert may argue that he finds that the coefficient for "Hunter Defective Loan Indicator" to be statistically significant at the 10 percent level, but a 10 percent level of statistical

(*footnote continued)*

164. Dr. Schwert then purports to show, using the results from his model, that the actual performance of the loans for three SLGs is worse than the predicted performance for those SLGs at the five percent significance level. His comparisons, however, are comparisons of actual and expected default rates of only the Hunter Sample loans in each SLG, not the entire SLG, and Dr. Schwert provides no evidence that such differences exist for all the loans in the SLGs based on his model.[71] As a result, the conclusions he claims to draw from these results are irrelevant to the issues related to the At-Issue SLGs as a whole.

165. In sum, my multinomial logit model should be credited over Dr. Schwert's—but Dr. Schwert's model (both before and after he "updated" it) supports my opinion that disclosed factors other than the origination of the At-Issue Loans or any alleged misrepresentations about their characteristics in the Offering Documents explain the defaults and serious delinquencies of all loans in the seven Supporting Loan Groups. In other words, based on this analysis, it is my opinion that the alleged defects were not the cause of the defaults and serious delinquencies experienced by the At-Issue loans.

B. The Alleged Misrepresentations Would Not Have Caused a Statistically Significant Change in Subordination for the At-Issue Certificates

166. I have reviewed the amended testimony of Dr. Schwert, in which he claims that I did "not quantify the additional losses that have resulted from inappropriate subordination levels

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(footnote continued)
significance is not a reliable basis on which to conclude that a relationship exists between independent and dependent variables. At best, a 10 percent level is indicative of only a very weak relationship, which is why it is conventional to use five percent as the threshold of significance. In fact, in a source cited by Dr. Schwert, the author notes that "[i]t is conventional to use a 5% size of test." *See*, Chris Brooks, Introductory Econometrics for Finance (2d ed. 2008) at pp. 58-59.

71 Schwert Report ¶ 52.

of the GSE certificates."[72] Dr. Schwert is referring to his assertion that he has shown an empirical relationship between what he calls "AAA subordination" levels and disclosed loan and borrower characteristics of the underlying collateral. His criticism is invalid, for the following reasons.

167. As Dr. Riddiough points out in his direct testimony, on which I rely, Dr. Schwert's model is invalid. It omits variables that are thought to have an impact on subordination, such as geographic concentration as well as important types of credit enhancement, such as excess spread and cross collateralization.[73] I understand Dr. Schwert has now declared in his testimony that he was unaware of any "standard or recognized ex-ante measure of excess spread that could be included in a regression analysis."[74] But one of the key academic papers on which Dr. Schwert based his subordination analysis actually did account for excess spread.[75] Although Dr. Schwert recognizes that "omitted variable bias . . . occurs when the omitted variables are correlated with the included variables,"[76] he does nothing to account for omitted variable bias.

168. In addition, Dr. Riddiough's analysis demonstrates that even Dr. Schwert's own regression model shows that the alleged misrepresentations would not have caused a change in

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[72] Amended Direct Testimony of G. William Schwert, February 27, 2015 ("Amended Schwert Declaration"), ¶ 56.

[73] Direct Testimony of Timothy Riddiough, February 20, 2015 ("Riddiough Affidavit"), ¶¶ 86-87.

[74] Amended Schwert Declaration ¶ 41.

[75] Adam Ashcraft, *et al.*, "MBS Ratings and the Mortgage Credit Boom," European Banking Center Discussion Paper No. 2010-24S (May 2010), p. 21 and Table 5.

[76] Amended Schwert Declaration ¶ 41.

the subordination levels for the At-Issue Certificates. For all seven securitizations, Dr. Riddiough's analysis shows that the actual subordination is not statistically significantly different from the subordination predicted by Dr. Schwert's model based on the purported "true" characteristics plaintiff claims existed. (Riddiough Direct ¶ 94.) DX-2916 and DX-1072 show these results using Dr. Schwert's "pool-level" and "deal-level" models, respectively. In other words, Dr. Schwert has not shown that the subordination levels were, in his terms, "inappropriate," even if the misrepresentations plaintiff claims to have identified did exist. To the contrary, Dr. Riddiough has used Dr. Schwert's regression model to show that the subordination levels were indeed appropriate.

169. Given the flaws in Dr. Schwert's analysis, there is no basis for me to assume that subordination levels would have been higher if the alleged misrepresentations were true, or to account for that assumption in my loss causation analysis.

C. Dr. Schwert's Benchmarking Analysis Using the Hunter Sample Shows That Alleged "Defects" Had Little or No Impact on the Likelihood that a Loan Would Default

170. In general, a benchmarking analysis identifies relevant comparable loans to serve as a benchmark. It then compares the performance of the loans being studied (here, the At-Issue Loans) to the performance of the loans in the benchmark.[77]

[77] On February 10, 2015, I understand that the Court excluded testimony that I otherwise would have given based on three benchmarks I used to evaluate whether Freddie Mac and Fannie Mae suffered any losses attributable to the alleged false or misleading disclosures. Doc. 1248. Two of these benchmarks were comprised of over 3 million loans each; the other was comprised of 4,198 loans that were re-underwritten by plaintiff's experts in this and other cases and not found to be materially defective. I had no reason to believe then, and have no reason to believe now, that any non-trivial number of loans included in these pools was not useable or reliable for my benchmarking analyses. I believed and continue to believe that these loans were appropriate for my analyses and are consistent with traditional standards for identifying benchmarks.

171. Dr. Schwert used regression analysis to develop and estimate a model of loan performance using as a benchmark "only the At-Issue Loans that Mr. Hunter evaluated," which he referred to as the "Hunter Sample." Dr. Schwert determined that the loans in the Hunter Sample were the appropriate benchmark, stating that "they are likely to be the most comparable to the At-Issue Loans because they are At-Issue Loans."[78]

172. Dr. Schwert's model and analysis, however, suffer from a serious methodological error—namely that he uses as a benchmark the Hunter Sample. This is a sample of loans that contains both Hunter Non-Defective and Hunter Defective loans. While the application of a multinomial logit specification to such a sample of a mortgage loans is appropriate because the focus of the study is to investigate factors that potentially impact the likelihood of competing outcomes it is not appropriate to use as a benchmark a sample that is assumed to contain a very large percentage of loans that are allegedly defective (here, 66.7 percent). The objective in undertaking a benchmarking analysis is to identify relevant comparable loans that can serve as a benchmark. Including large numbers of "defective" loans—assuming, as Mr. Hunter claims, they are truly defective—results in a set of estimated parameters that could be biased and, as a result, unreliable to use in order to predict the performance of the loans in the At-Issue SLGs.

173. Dr. Schwert attempts to account for this issue by simply including a Hunter Defective Loan Indicator as an explanatory variable. This, however, does not remedy the situation. Again, assuming that Hunter Defective Loans are truly defective, then each of the explanatory variables for Hunter Defective Loans is likely to have a different effect on the likelihood of default than the explanatory variables for the Hunter Non-Defective Loans. In other words, FICO score for Hunter Defective Loans would have a different effect on the

[78] Schwert Report ¶ 40.

likelihood of default than FICO score for Hunter Non-Defective loans; CLTV for Hunter Defective Loans would have a different effect on the likelihood of default than CLTV for Hunter Non-Defective loans; and so on. Simply including a Hunter Defective Loan Indicator, as Dr. Schwert did, does not eliminate such differences, nor has Dr. Schwert demonstrated that such differences do not exist.[79] Thus, the resulting biased parameter estimates from his model cannot be relied upon and credibly used to predict the expected default and serious delinquency rates for each At-Issue SLG, which is precisely what Dr. Schwert did. (*See* DX-2619.)

174. Despite these fundamental errors, I discuss the results of Dr. Schwert's benchmarking analysis below. That analysis purports to identify the relationship between relevant disclosed loan and borrower characteristics and changes in economic conditions, on the one hand, and events of loan default or serious delinquency, on the other hand. This allows him to (in his view) estimate the probability that each At-Issue Loan will become seriously delinquent or default based on reported loan and borrower characteristics and changes in economic conditions.

175. Dr. Schwert aggregates this performance metric (loan default or serious delinquency)—both actual and expected—to the Supporting Loan Group for each At-Issue Certificate to calculate an overall percentage of defaults and serious delinquencies for each Supporting Loan Group. He then compares the actual performance of the At-Issue Loans to the performance predicted by his Hunter Sample benchmark. DX-2619 shows the results of this analysis and is discussed below. He then uses another regression model to compare the actual

[79] *See*, *e.g.*, A.H. Studenmund, Using Econometrics: A Practical Guide, (3rd ed. 1997) at pp. 237-239.

and expected dollar losses for each Supporting Loan Group. DX-2621 shows the results of this analysis and is discussed below.

176. The results of Dr. Schwert's model show that only three of the seven Supporting Loan Groups had actual rates of default and serious delinquencies as of December 2013 that were statistically significantly higher than the expected rates determined by his Hunter Sample benchmark. Those three Supporting Loan Groups were from NHELI 2006-FM2, NHELI 2007-2, and NHELI 2007-3. DX-2619 shows the results of this analysis. With respect to the other four At-Issue Certificates (NAA 2005-AR6, NHELI 2006-FM1, NHELI 2006-HE3, and NHELI 2007-1), Dr. Schwert found no statistically significant difference in performance, and thus no evidence that alleged defects caused their losses. (DX-2619.) To be clear, I do not accept Dr. Schwert's analysis; I merely make these points to show that its results, in many ways, are consistent with mine.

D. Results after Making Appropriate Corrections to Dr. Schwert's Benchmarking Analysis Using the Hunter Sample

177. Aside from the design flaw I identified above, Dr. Schwert misapplied a number of statistical techniques in his regression and benchmarking analyses. I corrected his mistakes using techniques employed by researchers performing similar studies that are proper for the analysis Dr. Schwert performed. The results of those corrections are set forth below. When corrected, his analysis continues to support my opinion that any losses are explained by observable loan and borrower characteristics and changes in economic conditions because it explains a large share of the variation in default rates, leaving little left to be explained by "other" factors, including any alleged material defects.

178. Dollar Value Weighting. Using the results of his benchmarking regression model, Dr. Schwert analyzed whether the actual performance of a Supporting Loan Group differed from

its expected performance based on the dollar value weighted percentage of seriously delinquent and defaulted loans for the pools supporting each Certificate. This was the wrong way to do it. Dr. Schwert should have compared the actual and expected percentage of At-Issue Loans that were seriously delinquent or in default as of December 2013, rather than the actual and expected percentage of dollars' worth of principal balance in each Supporting Loan Group that had experienced such defaults. Traditional actuarial and academic studies of losses associated with default make use of two relationships—first the conditional probability of default over time and second, the dollar losses given default. The statistical models estimated in my analysis are specified in the traditional way. Dr. Schwert's are not.

179. First, to the extent loan size impacts the likelihood of default, that impact is already reflected in Dr. Schwert's results, because Dr. Schwert's model uses loan size as an independent variable. Second, the dollar value of the loans that default or become seriously delinquent is separately accounted for by Dr. Schwert in his calculation of actual and expected dollar value losses for each loan. In that analysis, Dr. Schwert computes expected losses for each loan as: the probability that a loan will default times the expected loss severity (given default) for that loan times the original loan balance of that loan. One should therefore not account for the dollar value of loans when simply comparing actual and predicted default rates of pools, but rather only in the calculation of expected dollar value losses. It should not be done in both stages of the analysis, as Dr. Schwert has done.

180. One-Tailed Test of Statistical Significance. In addition, Dr. Schwert should have used a two-tailed test of statistical significance as opposed to a one-tailed test. Since one does not know which direction the difference between actual and expected default rates might be (i.e., it is possible that the actual default rate of loans in a supporting loan group could be lower than

the default rate predicted than the benchmark), a two-tailed test is appropriate.[80] In other words, a two-tailed test does not presuppose whether the At-Issue Loans underperform or outperform the benchmark.

181. When I make these two corrections to Dr. Schwert's analysis, that analysis shows that only one of the seven Supporting Loan Groups at issue, the one for NHELI 2006-FM2, had an actual rate of default and serious delinquencies as of December 2013 that was statistically significantly higher than the expected default rate at the five percent significance level as determined by Dr. Schwert's Hunter Benchmark (a result, I might note, that is consistent with my analysis). Thus, Dr. Schwert's analysis provides no evidence to contradict my opinion that the alleged misrepresentations did not cause any losses for the other six At-Issue Certificates. Indeed, there is no statistical evidence that the alleged misrepresentations caused any losses for the other six At-Issue Certificates. Again, to be clear, I do not accept Dr. Schwert's analysis, even as corrected; I merely make these points to show that its results, in many ways, are consistent with mine.

IX. Conclusion

182. The substantial growth followed by the sudden, dramatic decline in the housing market and the mortgage industry during the last decade were unprecedented. Although market participants and observers understood that even a modest decline in house prices could adversely affect the financial health of the primary and secondary mortgage markets, the market failed to anticipate the rapidity and severity of the decline.

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[80] *See*, *e.g.*, Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach (4th ed. 2009) at p. 128 ("[I]t is common to test the null hypothesis … against a two-sided alternative" and "Even when we know whether [the relationship] is positive or negative under the alternative [hypothesis], a two-sided test is often prudent.")

183. The principal factors that led to the growth in house prices and mortgage markets were numerous and mutually reinforcing. These factors included governmental policies promoting homeownership and lending, extraordinarily low interest rates, and a sustained period of economic growth. The result was an increase in consumer demand for both homes and mortgages. A number of financial innovations led to the ready supply of capital, which facilitated significant increases in mortgage lending, homeownership, and house prices.

184. The factors contributing to the decline in the housing and mortgage markets were likewise numerous and mutually reinforcing. Decreased demand for housing caused by affordability problems, coupled with excess supply caused prices to soften. Negative equity and rising unemployment limited borrowers' abilities to obtain loans and to refinance existing loans. Defaults and foreclosures increased, leading to further price declines. In the boom-and-bust cycle experienced in the housing market and the broader economy, virtually all participants in the mortgage industry suffered losses. The losses were the direct result of a market-wide increase in defaults and delinquencies, which were, in turn, the result of numerous factors, particularly the unexpected systemic, sudden, rapid, and deep declines in house prices. This dynamic has often been referred to as a "black swan" event, in the finance literature, *i.e.*, an unexpected event that could not have been predicted but which has a major adverse (or positive) impact on the market.[81]

185. In my opinion, based upon empirical evidence, any excess losses suffered by Freddie Mac and Fannie Mae as owners of the At-Issue Certificates were caused by these market-wide factors—particularly the decline in house prices. I demonstrated this with a

[81] Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable*. New York: Random House, 2007.

regression analysis, which shows that the alleged misstatements did not cause the defaults and serious delinquencies experienced by loans in the seven Supporting Loan Groups. Instead, one must conclude that either those defaults and serious delinquencies (and any related losses) are attributed to industry and economy-wide market factors unrelated to plaintiff's allegations—or the alleged misrepresentations do not exist at all. My opinion that Freddie Mac and Fannie Mae suffered no loss attributable to any alleged false or misleading disclosures was confirmed by the analyses performed by plaintiff's expert Dr. Schwert.

Kerry Vandell, Ph.D.

SWORN before me
this 4th day of March 2015

Notary Public

A NOTARY PUBLIC OR OTHER OFFICER COMPLETING THIS CERTIFICATE VERIFIES ONLY THE IDENTITY OF THE INDIVIDUAL WHO SIGNED THE DOCUMENT TO WHICH THIS CERTIFICATE IS ATTACHED, AND NOT THE TRUTHFULNESS, ACCURACY, OR VALIDITY OF THAT DOCUMENT.

JURAT

State of California
County of Orange

Subscribed and sworn to (or affirmed) before me on this 4th day of MAR, 2015, by KERRY VANDELL proved to me on this basis of satisfactory evidence to be the person (s) who appeared before me.

Signature _____ of Notary Public

MEHDI ZAHEDI
Comm. #1961793
Notary Public · California
Orange County
Comm. Expires Dec 23, 2015